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ARCHEOLOGICAL INVESTIGATIONS IN THE TRUSCOTT RESERVOIR AREA. KI--ETC(U)
JUN 78 G M ETCHIESON, R D SPEER, J T HUGHES DACW56-77-C-0110

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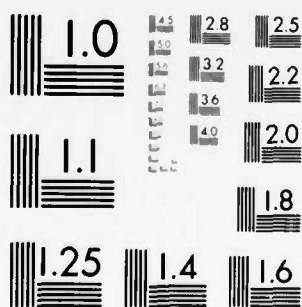
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ARCHEOLOGICAL INVESTIGATIONS IN THE TRUSCOTT RESERVOIR AREA, KING AND KNOX COUNTIES, TEXAS

by

Gerald Meeks Etchieson, Roberta D. Speer,
and Jack T. Hughes

with contribution by Pollyanna B. Hughes
and appendices by Scott J. Taylor, Robert A. Wright,
and H. Charles Hood

Submitted to the U.S. Army Corps of Engineers,
Texas District, in partial fulfillment
of Contract No. DACW39-77-C-0115

Geological Research Laboratory
United States Army Corps of Engineers
Fort Belvoir, Illinois

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Archeological Research Laboratory
Killgore Research Center
West Texas State University

Canyon, Texas

June, 1978

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ABSTRACT

During 1977 West Texas State University conducted archeological investigations at the proposed Bateman Pumping Station, Bateman to Truscott pipeline, and Truscott Brine Lake in Salt Source Areas VIII and X of the U.S. Army Corps of Engineers Wichita River Chloride Control Project in King and Knox counties, Texas. The eastward-flowing Wichita River drainage in north-central Texas crosses a land of moderate relief developed on widely eroded Permian redbeds mantled in places with thin Quaternary deposits. The project area is in the Rolling Plains physiographic region and the Mesquite Plains biotic district. It is a seemingly inhospitable region of extreme temperatures, low rainfall, and generally saline groundwater, with mesquite and juniper the main vegetation.

A total of 76 sites (67 archeological, 3 historical, and 6 paleontological) were recorded and investigated in and around the project area. No sites were found at the Bateman Pumping Station. Ten sites (9 archeological and 1 paleontological) were found along the pipeline. The 9 archeological sites were investigated by general collecting. Fifty-one sites (47 archeological, 2 historical, and 2 paleontological) were found in the Truscott Reservoir area. Of the 47 archeological sites, 36 were general-collected, 4 were control-collected, and 7 were tested. Of the 2 historical sites, 1 (a stone-walled half-dugout) was excavated and 1 (a rock fence) was merely recorded. Fifteen sites (11 archeological, 1 historical, and 3 paleontological) outside of the project area were visited. General collections were made at the 11 archeological sites.

The 56 archeological sites within the project area are generally small surficial scatters of lithic debitage and fire-cracked rocks on sheetwashed bedrock, with occasional boiling stone dumps or sandstone slab hearths, and a limited number

and variety of stone tools. The sites occur in seven different kinds of geological locations, and seem to represent brief but sometimes repeated utilization as open camps, processing stations, and lithic workshops. Excluding the historic dugout with 82 specimens, the 67 archeological sites investigated both within and outside the project area produced a total of 10,252 specimens. These are overwhelmingly of stone (10,100); the rest are faunal remains (81), pottery (5), metal (2), and samples (64). Eleven different kinds of lithic materials are recognizable in the collections, mostly from local gravel sources but some of exotic origin. By far the most numerous stone items are lithic debitage (4,305) and burned rocks (3,557). Items classified as stone tools (2,238) are much less abundant, and the only classes of much frequency are retouched flakes (584), scrapers (308), hammerstones (302), choppers (164), gouges (150), chipped pebbles (131), manos (125), crude bifaces (124), knives (87), gravers (68), dartpoints (49), and spokeshaves (47).

The project area seems to have been inhabited primarily during the Archaic Stage of native American cultural development; no evidence of earlier PaleoIndian habitation was found, and only scant evidence of later NeoIndian and historic habitation. On the basis of dartpoints, a sequence of 5 substages (Initial, Early, Middle, Late, and Terminal) of the Archaic Stage is proposed for this part of the Rolling Plains. Most of the dartpoints at sites in the area indicate occupations during the later substages, but the gouges suggest earlier occupations. Evidence for other kinds of dating was not recovered. The sites apparently were utilized by small family groups of nomadic foragers who subsisted more on wild plant foods than on game animals. Their cultural affiliations are mainly with groups elsewhere in the Rolling Plains, but links with the Edwards Plateau not far to the south are also evident.

Our investigations did not reveal any sites in the project area that we regard as eligible for nomination to the National Register of Historic Places. Unless construction or development activities reveal significant cultural resources that have been overlooked, no additional mitigation work is recommended.

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ACKNOWLEDGEMENTS

The authors are indebted to numerous individuals for their cooperation, consideration, and advice. This report is possible because of their generous efforts.

We are grateful to the U.S. Army Corps of Engineers, particularly Ms. Sue Purves, Tulsa District Archeologist, for unfailing cooperation and genuine concern for our needs, and to Mr. Phil Lutz, Resident Engineer, for greatly facilitating some portions of the field work.

We thank the many landowners, and their ranch foremen, who provided valuable information and worried about our welfare as they allowed us to trespass freely, scare their cattle, and deepen the ruts in their pasture roads. These include Mr. Bob Masterson, Mr. Bill Masterson, Mr. James Albright, Mr. A. E. Propps, Mr. George Schmoker, Mr. Ed Lowrance, Mr. and Mrs. Sydney Alexander, Mr. Charles Carroll, Mr. and Mrs. Edgar Jones, Mr. Vernon Jones, and Mr. and Mrs. Jack Brown. We are especially grateful to Mrs. Brown for assistance in researching the history of the region and helping to locate the two historic sites in the reservoir.

We are indebted to the residents of Knox and King counties, who gave generously of their time and knowledge of the region, allowed us to photograph their collections, and answered our many questions. Among these are Mr. and Mrs. B. Hendrix of Knox City; Mr. Bud Connor and Mr. Vernon McCanlies of Benjamin; Mr. Chris Moody of Crowell; Mr. Paul Horne of Gilliland and Mr. Ted Horne from Plainview. We also thank all of the wonderful citizens of Truscott who took us into their homes and hearts. We most particularly thank Mattie and Clyde Bullion; Mr. Gene Chapman and the J. H. Cumleys who lent the crew their cool and beautiful home for the summer.

Our gratitude goes to Mr. and Mrs. Roy Dickinson, Mr. John A. Kay, Mr. Benton Ross, and the staff of the Texas Highway Department District Headquarters of Wichita Falls for outstanding hospitality and cooperation.

We remain indebted to Mr. Albert Redder of Waco for a most enlightening two-day tour of Knox County sites, and for generously sharing his penetrating understanding of the regional archeology, to say nothing of his car, cameras, records, time, and his mother's fine board.

We thank our long-suffering field crew for their tolerance and dedication. The field work could not have been accomplished without the added direction of Claire Maxwell who served as Field Assistant. All paid crew members were West Texas State University students, and many worked through most of the field season, but only Kathy Coppin spent the entire summer in the field. Other crew members who worked most of the season include Susan Bradshaw, Brad Daniel, Fred Oglesby, Anna Jean Taylor, and Mike Wehrman. Other paid crew members who worked for brief periods during the summer include Janice Bass, Doug Boyd, Bill Chop, Kevin Dunn, Eddie Kiser, and Beverly Schmidt. Invaluable volunteers both during and after the season include Mr. Owen New of Truscott; Candace Collier, Jim Couzzourt, Mary Etchieson, and Terry Stephenson of Canyon; and Aaron Maxwell and Julie Speer of Amarillo.

For professional advice and services we wish to thank the following: Dr. Vaughn M. Bryant, Jr., Associate Professor of Anthropology and Botany, Texas A&M University, for examining our soil samples for pollen; Mr. Alton Briggs, Cultural Resource Management Archeologist, Ms. LaVerne Herrington, Cultural Resource Archeologist, and Mr. Robert J. Mallouf, Director, Archeological Surveys and Research, Texas Historical Commission, for providing information pertinent to the study area and also for examining our historical collections; Dr. Phillip Colee, Assistant Professor of Anthropology, Midwestern State University,

for providing some background information on the Wichita Falls area; Mr. Mark Denton, Archeological Research Assistant, Texas Tech University, for examining our historical collections; Mr. Billy R. Harrison, Curator of Anthropology, Mr. Byron Price, Curator of History, and Mr. Henry Smith, Museum Volunteer, Panhandle-Plains Historical Museum, for examining archeological and historical collections from the project area; Mr. H. Charles Hood, Project Geologist, Tuthill and Barbee, Amarillo, for conducting an analysis of the Seymour gravels; Mrs. Pollyanna B. Hughes, Professor of History and Anthropology, Amarillo College, for researching the historical background of the King and Knox counties area; Dr. Stewart Peckham, Acting Director of the Laboratory of Anthropology, Museum of Anthropology at Santa Fe, for examining ceramics found in the study area; Dr. Gerald E. Schultz, Professor of Geology, WTSU, for identification of fossil material from the project area; Dr. S. Alan Skinner, Director of Archeological Research Program, Southern Methodist University, for providing information pertaining to the King-Knox counties area; Mr. Scott J. Taylor, Consulting Geologist, for completing the grain-size analysis; and Dr. Robert A. Wright, Professor of Biology, WTSU, for conducting a dendrochronological analysis of wood samples from Site 41KX66.

Analysis of the collections and preparation of the report involved the talented efforts of numerous WT students and a few non-students. The art work is an unrepayable gift from Marty Means. Most of the maps were drafted by Allen Donaldson; most of the artifacts were photographed by Pat Newman and were printed by both him and the authors. Greg Wilson assisted with the analysis of the Seymour gravels. Other persons involved in some phase of the laboratory work include Pat Harris, Michelle Holt, Claire Newman, Terry Stephenson, Johnnie Wilson, and most members of the summer field crew.

Special thanks also go to Mr. Sandy Watts of San Antonio, Mr. E. C. Hossler of Amarillo, and Mr. Kim E. Taylor of Canyon for helping with the description of the cartridge cases from Site 41KX66.

Last but certainly not least, we are especially indebted to Mrs. Bette Haines of Killgore Research Center for typing the report.

I. INTRODUCTION

This is a report on archeological investigations conducted during 1977 by the Archeological Research Laboratory, Killgore Research Center, West Texas State University for the U.S. Army Corps of Engineers, Tulsa District under Contract No. DACW56-77-C-0110 dated March 17, 1977. The contract called for archeological investigations as needed in three construction areas which are part of the Wichita River portion of the Red River Chloride Control Project.

The Wichita River portion (Salt Source Areas VII, VIII, and X) of the Red River Chloride Control Project covers a large area in Cottle, Foard, King, and Knox counties, Texas (Fig. 1). The aim of this portion of the project is "to reduce the brine concentration entering Lake Kemp, a municipal water supply, and along with other control structures, the Red River, to a level acceptable for irrigation use without subsequent treatment. The proposed plan consists of construction of four low-flow dams for collection of brine laden waters, two brine storage dams for holding the concentrated salt solution during evaporation, and the necessary pumps and pipelines to transport the solution to the brine storage reservoirs" (Daugherty 1972:1-1).

The three structures investigated in the present study are located on the South and North forks of the Wichita River in King and Knox counties, Texas. They are the Bateman Pumping Station in Salt Source Area VIII, the Bateman to Truscott brine pipeline, and the Truscott Brine Lake (Truscott Reservoir) for Areas VIII and X (Fig. 2).

The Bateman Pumping Station is located in King County on the South Fork of the Wichita River at mile 74.9. This pumping station will be the brine collection structure for Area VIII. The area of this drainage basin is 572.4 square km. (221 sq. mi.). The basin heads about 32.2 km. (20 mi.) west of Guthrie. The

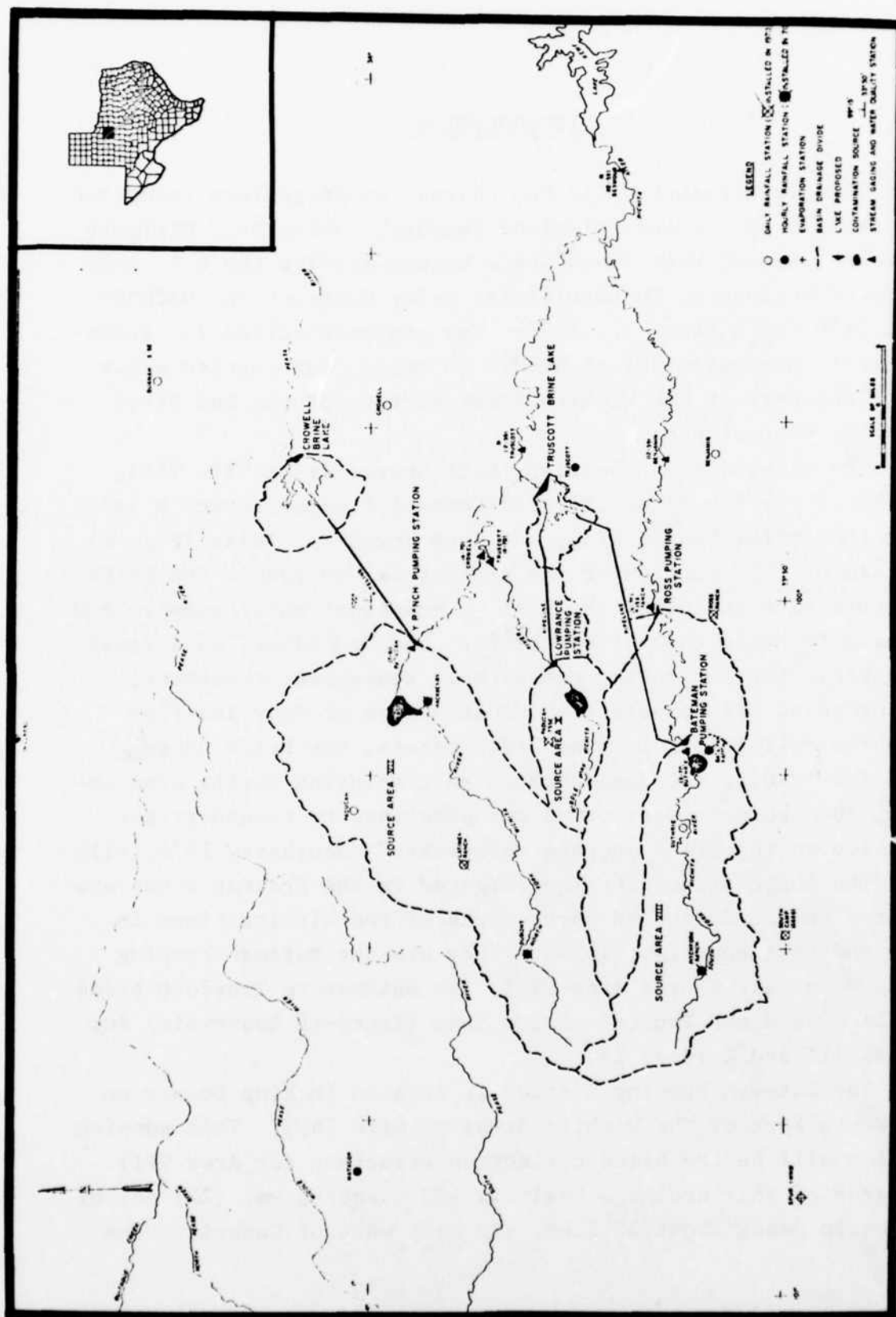


Figure 1. Map showing locations of Chloride Control Areas VII, VIII, and X.

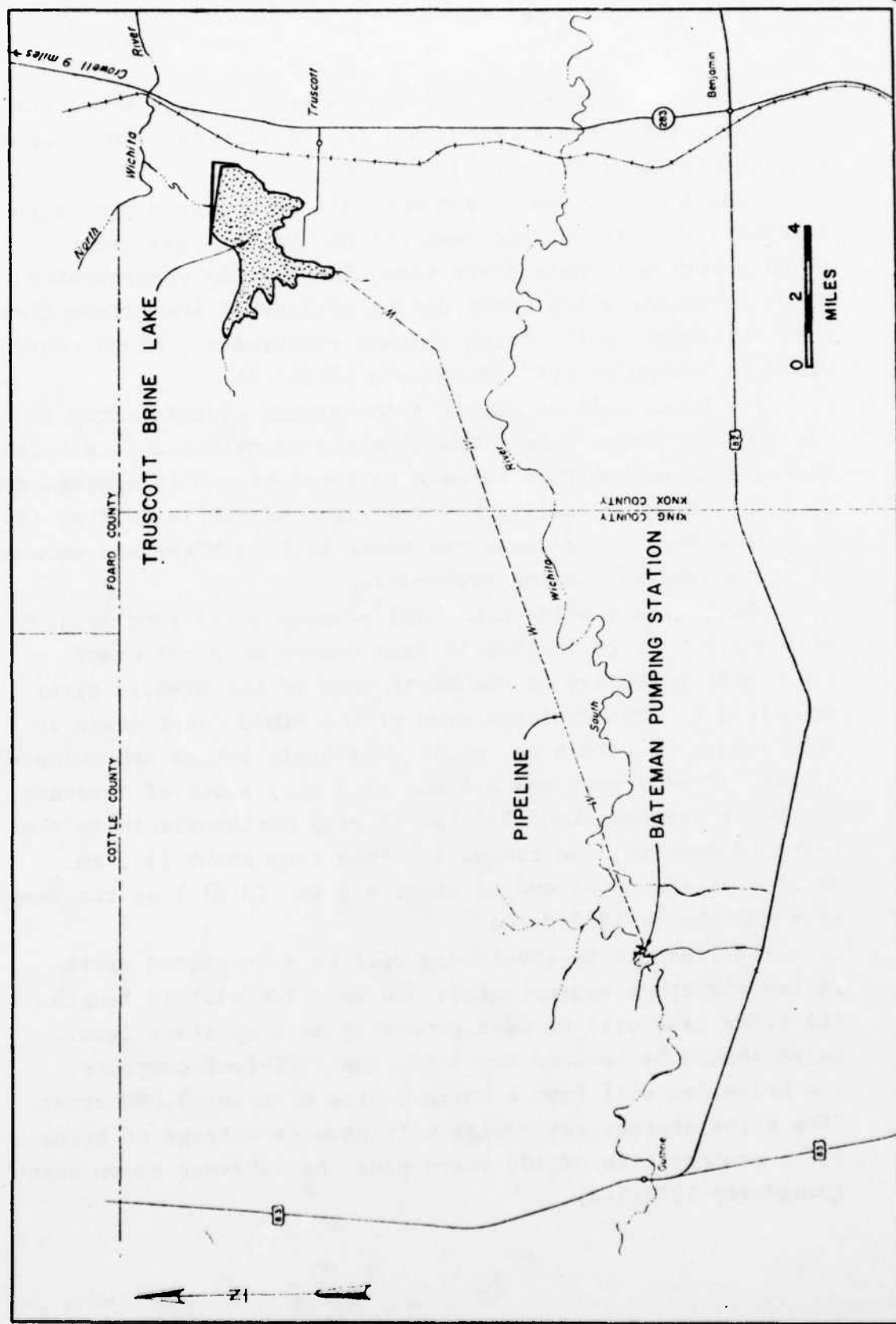


Figure 2. Map showing location of the Truscott Reservoir project area.

upper part of the basin is about 19.3 km. (12 mi.) wide, but the width diminishes to about 9.7 km. (6 mi.) near the proposed pumping station (Daugherty 1972:2-9).

"The low-flow dam at Bateman will be concrete ogee-type spillways with inflatable dams set on the spillway crest. Flood waters will pass downstream, but heavily concentrated brine solutions which occur during periods of low stream flow will be pumped to the brine storage reservoirs. Flood control would be insignificant" (Daugherty 1972:1-3).

The brine will be pumped from Bateman cross-country to the Truscott Brine Lake. The pipeline is oriented in a north-eastward direction from Bateman to Truscott and is approximately 35.8 km. (21 mi.) in length. The right-of-way is 30.5 m. (100 ft.) in width. It crosses the South Wichita River and several of its southward-flowing tributaries.

The Truscott Brine Lake will receive brine from Areas VIII and X. It is located in Knox County on Bluff Creek, a south-side tributary of the North Fork of the Wichita River at mile 3.6. The drainage area of the Bluff Creek basin is 68.9 square km. (26.6 sq. mi.). The basin begins approximately 6.4 km. (4 mi.) west and 2.4 km. (1.5 mi.) south of Truscott. The basin extends about 9.7 km. (6 mi.) northeastward to the proposed damsite, and ranges in width from about 11.3 km. (7 mi.) at the upper end to about 4.8 km. (3 mi.) at the dam-site (Daugherty 1972:2-10).

The Truscott Reservoir dam will be a compacted earth-filled structure approximately 5.4 km. (3.4 mi.) in length. The brine lake will be kept generally at a constant level which should be between the 1502- and 1505-foot contours. The brine dam will have a surface area of about 3,090 acres. "The brine storage reservoirs will provide storage of brine for a project life of 100 years plus the 100-year storm event" (Daugherty 1972:1-3).

The contract between WTSU and the Corps of Engineers called for the archeological investigations to include:

- a. A literature and records search and informant interviews relative to the archeology and history of the study area.
- b. As complete as possible on-foot coverage to determine specific site locations and provide a complete and accurate cultural resource inventory.
- c. Test excavations at the discretion of the contractor in order to provide an evaluation of the cultural deposits.
- d. An evaluation of site significance based on cultural affiliation, physiographic setting, and potential for providing additional scientific data. The evaluation will be used for determination of eligibility for nomination to the National Register of Historic Places.
- e. A report of the results of the investigations.

The contract called for the report of these investigations to include:

- a. An abstract detailing the most significant data resulting from the investigations so that it can be used verbatim for publication elsewhere as a synopsis of work performed and results achieved.
- b. A summary description of the environment, the culture history, previous archeological research, a discussion of methodology, and a statement of the number of person-days required to complete the survey and the number of acres examined in each area.
- c. The survey results, including complete site descriptions and artifact analyses.
- d. Maps showing site locations and areas surveyed.
- e. Site evaluations and a discussion of the significance of the data recovered.
- f. Recommendations for nomination of individual sites or districts to the National Register of Historic Places, if warranted.

The archeological investigations included surveying the remainder of the Truscott Reservoir not examined during an earlier reconnaissance (Hughes 1972); a survey of the pipeline right-of-way; and a survey of the pumping station. Several of

the sites in the reservoir area contained deposits and/or features which warranted testing and excavation to check the depth and/or the significance of the resource. It is believed that the impact of the proposed construction on the archeological resources of the project area have been adequately mitigated by the present investigations, and no further work is recommended.

The archeological investigations were directed by Dr. Jack T. Hughes, Director of the Archeological Research Laboratory at WTSU. The field work was supervised by Gerald Meeks Etchieson, Project Archeologist, with the help of Claire Maxwell, Field Assistant. The field crew consisted of six paid helpers and several volunteers at various times. Field work began with an inspection tour on April 22-23, 1977 and was conducted on a continual basis from May 9 through August 20, 1977. Three additional brief trips to the project area were made during the fall of the year. Laboratory work was supervised by Roberta D. Speer, Laboratory Supervisor, who also assisted with some of the field work.

The 1972 reconnaissance recorded 9 archeological sites (8 in the Truscott Reservoir and 1 outside the project area near the Bateman Pumping Station). During the present investigations an additional 41 sites were recorded in the reservoir area and 9 along the pipeline right-of-way. No sites were located in the area to be affected by the Bateman Pumping Station. This brings to 58 the total number of sites recorded in the project area. In addition, 12 sites outside the project area were visited, and 7 of these which had not been previously recorded were recorded. Six paleontological sites were recorded during the investigations (3 in the project area and 3 outside).

All of the archeological sites in the project area are open occupational areas, specialized activity areas, or workshops. The sites range from very small temporary sites

evidenced by as little as a single rock hearth, to larger sites evidenced by a scattering of rock hearths, stone tools, and debitage. No large permanent village sites were found. Most of the sites are surficial with extensive exposure. Prehistoric habitation of the area was primarily during the Archaic Stage. No evidence for PaleoIndian utilization and only limited evidence for NeoIndian utilization was found in the project area.

The present report begins with preliminary sections reviewing the environmental setting, archeological background, historical background, and previous investigations of the project area. The main body of the report follows with sections describing the present investigations, the sites, and the specimens. The report concludes with cultural interpretations and a summary of the findings of the present study.

Preparation of the report has been a cooperative enterprise among the authors, with Etchieson being primarily responsible for some sections, Speer for others, and Hughes providing general assistance. Section IV on the historical background of the project area has been contributed by Pollyanna B. Hughes, Professor of History and Anthropology at Amarillo College. Other contributions are Appendix I on soil grain-size analysis by Scott J. Taylor, Consulting Geologist; Appendix II on tree-ring analysis by Dr. Robert A. Wright, Professor of Biology at WTSU; and Appendix III on Seymour gravel analysis by H. Charles Hood, Project Geologist with Tuthill and Barbee, Amarillo. Most of the maps were drafted by Allen Donaldson and most of the artifact photos were taken by Billy Pat Newman. Donaldson and Newman are students at WTSU, as is Marty Means, who contributed the art work.

II. ENVIRONMENTAL SETTING

Detailed descriptions of the environmental setting of the project area have been presented in an Environmental Impact Analysis of the Arkansas-Red River Basins Water Quality Control Study Part I, Areas VII, VIII, and X, Texas, submitted to the U.S. Army Corps of Engineers, Tulsa District, in October, 1972 by West Texas State University, Canyon, Texas (West Texas State University 1972). These descriptions were prepared by qualified experts who are members of the university faculty. Information relating to physiography and geology is by Dr. Franklin W. Daugherty of the Department of Geology and Anthropology; hydrology is by Dr. Daugherty and Dr. Robert M. Winn of the same department; pedology is by Dr. Jimmie L. Green of the Department of Plant Science and Dr. Winn; climatology is by Dr. Daugherty; botany is by Dr. Larry C. Higgins and Dr. Robert A. Wright of the Department of Biology; and zoology is by Dr. Derl L. Brooks and Mr. Ronald R. McKown of the Department of Biology. Archeological interpretation of the environmental setting is by Dr. Jack T. Hughes of the Department of Geology and Anthropology. Paleontological information is by Dr. Gerald E. Schultz also of the Department of Geology and Anthropology. The environmental data are summarized below.

PHYSIOGRAPHY

The project area is located in the Wichita River Basin, in Knox and King counties, Texas. According to the Lobeck (1948) classification, it is in the southwestern part of the Osage Plains section of the Central Lowlands physiographic province (Fig. 3). The area is drained by the South Wichita River and its principal tributaries, the Middle and North Forks of the Wichita (Fig. 4). In general, the drainage is

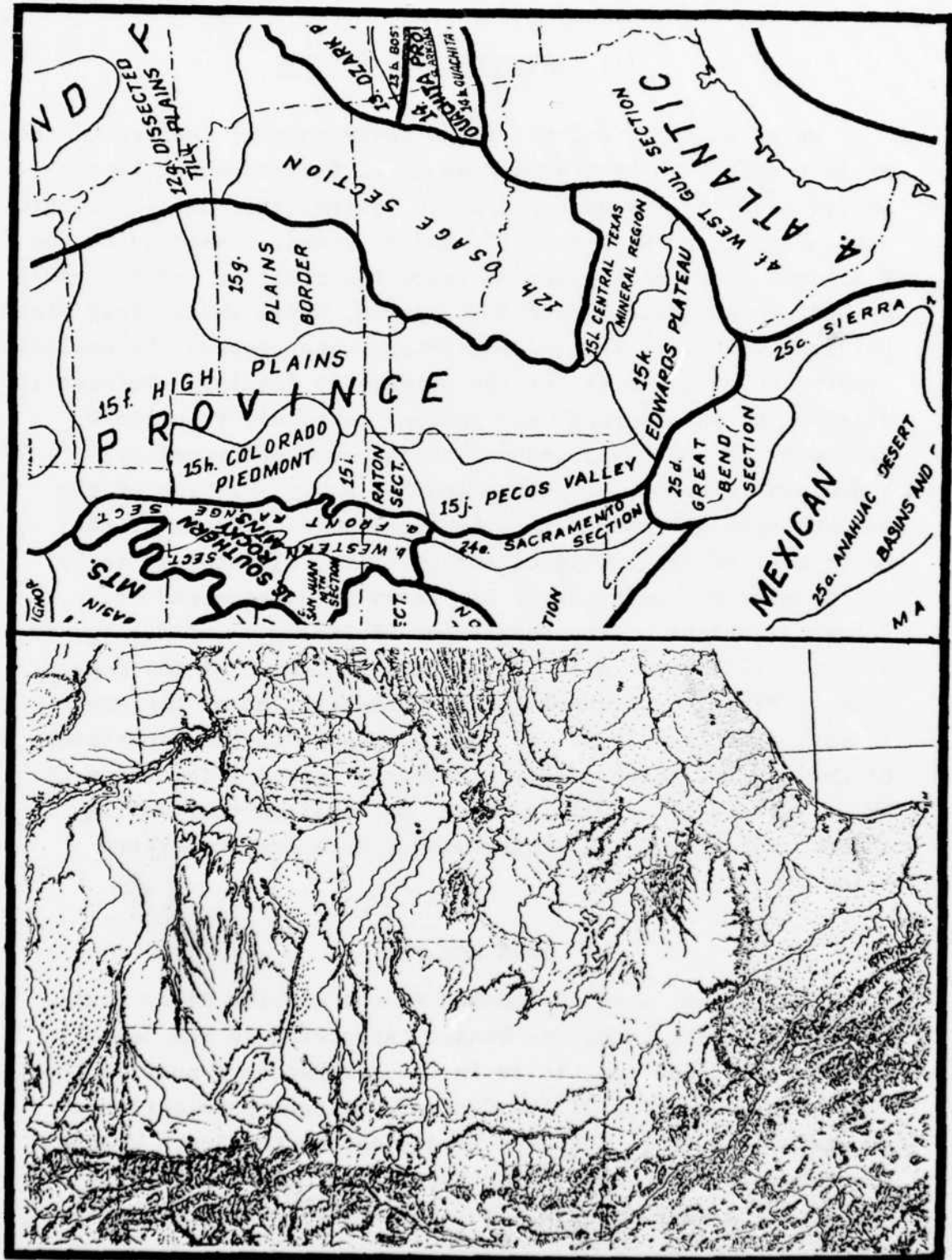


Figure 3. Physiographic features and biotic provinces of the Rolling Plains region.
From Lobeck 1948.

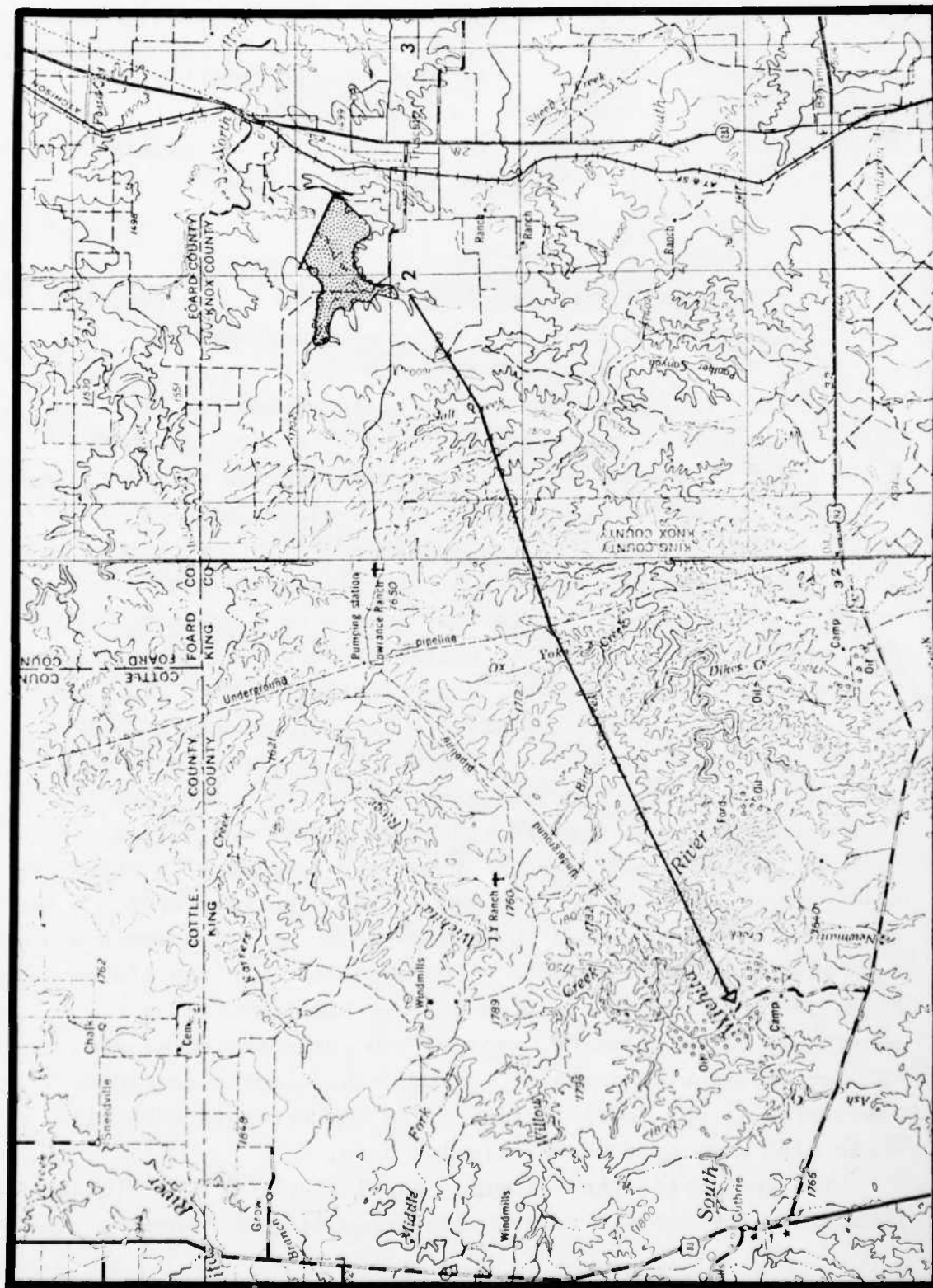


Figure 4. Topographic map of the Truscott Reservoir project area. From U.S. Geological Survey Lubbock and Wichita Falls sheets, scale 1:250,000.

in an easterly direction across an area of relatively low relief. Maximum relief is about 600 feet from the broad shale valleys on the east, across a rugged gypsum escarpment, to the flat uplands to the west of the project area.

GEOLOGY

Permian redbeds and associated evaporites of Clear Fork and Double Mountain groups are the predominant surface rocks, which include, in ascending order, the Choza Shale, San Angelo Formation, Flowerpot Shale, Blaine Formation, and Dog Creek Shale. Total thickness of these formations is about 1,000 feet. From east to west the ascent in the stratigraphic column is accompanied by an increase in elevation.

The Choza consists primarily of generally impervious shales with a few siltstone beds. Locally it is not known to be fossiliferous. The San Angelo is a fine-grained, relatively impervious sandstone or siltstone with occasional thin selenite or gypsiferous beds. In the Truscott Reservoir area of Knox County it contains significant concentrations of fossil vertebrate remains. The lower Flowerpot is mainly shale with thin selenite stringers, while the upper part becomes gypsiferous, with several thin gypsum units separated by shales. Although the Flowerpot is generally unfossiliferous, and it is not exposed in the reservoir area, deposits of the lowermost shale member exposed on a ranch a few miles away have produced a few vertebrates. The Blaine Formation consists of two members, the Elm Fork with a relatively thick dolomite, gypsum, and shale sequence, and the Van Vacter with a shale, gypsum, and dolomite sequence. The Blaine is not fossiliferous. The Dog Creek is primarily shale with some gypsum and dolomite beds.

The gypsum and the dolomite, particularly of the Blaine Formation, are subject to solution, resulting in slump

and collapse structures, and sinks and caves typical of karst topography. Replacement shales are commonly found occupying the standard gypsum position where extensive solutioning has taken place.

Capping the Permian redbeds is a thin, discontinuous mantle of nearly level Pleistocene gravels and sands of the Seymour Formation. These Pleistocene deposits cap the broad, flat interfluvial divides in the project area. The gravels include a wealth of lithic materials that were heavily exploited by the prehistoric inhabitants of the region. Among these materials are chert, quartzite, silicified wood, milky quartz, and an assortment of small and large igneous and metamorphic pebbles.

Regional tectonic features include parts of three major units. From south to north, they are the Red River uplift, the Palo Duro-Hardeman basin, and the Wichita-Amarillo uplift. The rocks generally dip slightly to the west, although local structures occur in the form of folds and faults.

The geological resources of the project area were more than adequate for early man. The varied terrain offers a wide choice of camping sites. Small rock overhangs were observed in the area, but the formations evidently do not lend themselves to development of large rock shelters. Lithic resources are varied and abundant, and are described in a special section of this report. The main disadvantage of the region is bad water.

HYDROLOGY

The three principal streams of the Wichita River drainage originate in the rolling hill country of western Texas and flow eastward into the rolling prairie land of north-central Texas. They develop from small gullies in the upper reaches to well-defined valleys with narrow floodplains bordered by high bluffs in the lower reaches of the project area.

Although periods of extreme flow occur each year, the main streams are perennial. The smaller tributaries are intermittent. Stream flow is very erratic, ranging from nearly no water to flood conditions.

Local structure, stratigraphy, and topography control the occurrence of the salt springs and seeps in the upper reaches of the Wichita River drainage. Several formations probably contain subsurface halite which is removed through solution by groundwater movement. The springs on the North Wichita River emit from the Guthrie Dolomite of the Dog Creek Shale. The springs on the Middle Fork emit from gypsums and dolomites of the Elm Fork Member of the Blaine Formation. On the South Wichita the emission is from gypsums and dolomites of the Blaine Formation. Several artesian aquifers, generally dolomites of the Blaine or Dog Creek formations, contribute to the poor quality groundwater.

Groundwater supplies in the project area are usually highly contaminated by natural chlorides and sulfates. There are no sizeable natural lakes and no major reservoirs in the area. Small springs from perched aquifers provide limited amounts of water of much lower salinity than that of the Wichita River and its tributaries.

PEDOLOGY

Most of the reservoir area is classified as "badlands," a term for intricately dissected terrain developed upon shales and clays. Little soil accumulates because most of it is quickly removed by sheet wash. Overburden on the uplands is thin to nonexistent, except where unconsolidated Pleistocene deposits occur locally.

Soils in the reservoir area are exceedingly variable, reflecting the nature of the parent material. The major soil associations are the Mangum-Clairmont and the Owens-Vernon-Badland complexes. The best soils belong to the

Mangum-Clairmont Complex. These soils occupy the valley floor, and were developed from recent alluvium.

Although such soils are suitable for primitive horticulture, no traces of farming Indians were found. If native horticultural village sites are present in the region, perhaps they are located on the divides, like the modern farming towns, where both the soil and water are best.

CLIMATOLOGY

The upper part of the Wichita River Basin has an average annual precipitation that ranges from 21 to 24 inches. About 70% of this amount falls during the months of May through October. Snowfall is insignificant, averaging about 7 inches annually. The mean annual temperature is 62.5°F, but ranges from a low of -8° to a high of 114°. The annual evaporation rate is about 40 inches.

Although not ideal because of summer heat, the climate of the reservoir area probably was tolerable to favorable for early man in the region.

BOTANY

The project area is located in the Mesquite Plains biotic district of the Kansas biotic province (Blair 1950). It is a generally open brush country, with mesquite dominating the flats, and juniper dominating the breaks. The floral assemblage is highly diverse due to the variety of ecological niches that exist. Four plant communities are recognized in the area: Juniper Scrub, Mesquite-Grassland Savannah, Mesquite Thicket, and Riparian.

The Juniper Scrub plant community occurs on the sloping uplands of the region. This area is generally very low in plant species diversity. Junipers are by far the most common woody plants, and in some areas are the only perennial plants.

Lesser numbers of other shrubs, such as mesquite and condalia, occur intermixed among the junipers. Erosion is too rapid to allow much of a ground cover of perennial species, but the area does provide a habitat for wildlife.

The Mesquite-Grassland Savannah plant community occurs on the more nearly level areas adjacent to the Juniper Scrub community. In it the dominant shrub is mesquite, but there are considerable condalias, and also a few salt cedar, soapberry, and hackberry in the woody overstory. The understory includes buffalo grass, tobosa grass, sideoats grama, three-awns, and numerous species of forbs.

The Mesquite Thicket plant community occurs in the bottomlands. Here, mesquite is presently the dominant woody species, but there are also salt cedars, soapberry plants, a dense cover of bermuda grass, buffalo grass, tobosa grass, alkali sacaton, and various species of forbs such as cocklebur. In prehistoric times, prior to the presence of domestic livestock in the area, the tree and shrub cover probably was considerably less dense.

The Riparian plant community occurs along the banks of the creeks that run through the area. It extends as a narrow band of vegetation parallel to the creek channels. It contains most of the trees and shrubs found in the other communities, but salt cedars seem to assume dominance here. Willow, wolfberry, soapberry, hackberry, and mesquite complete the woody plant aspect. Cocklebur and ragweed are the most conspicuous forbs.

These four plant communities probably provided an adequate, if not abundant, source of food, wood, and fiber for the prehistoric inhabitants of the region. Although only seasonally productive, many of the species produce foodstuffs that are utilized by the present-day inhabitants of the area (A. J. Redder 1977). For instance, hackberries, while of limited pulp, are quite tasty. Mesquite beans are abundant

and some are edible. Moreover, when cut, the woody mesquite extrudes an edible gum. The gum is a source of syrup, and of an effective glue, possibly useful for tasks such as attaching projectile points to shafts. Other food resources include the berries, roots, blossoms, and/or fruits of wild plum, prickly pear, jumping devil, agarita, Mormon tea, chaparral (condalia), wild onion, and cattail. Mesquite and juniper may have been used for bow-wood. Possible sources of fiber for clothing, shelter, containers, etc. are yucca, cattail, and juniper. The agarita plant produces berries that are a base for excellent jellies and wines. The roots of the plant have been used for medicinal purposes, and also for a fine bright yellow dye that presently is used commercially (Whittington 1977:11-13).

ZOOLOGY

The faunal resources of the project area are also highly diverse and numerous. The area contains approximately 20 species of fish, 13 species of amphibians, 48 species of reptiles, 234 species of birds, 40 species of mammals, and a few species of invertebrates. Faunal collections have been made at a variety of locations throughout the area.

The fish population of the North and South Forks of the Wichita River is limited due to the heavy brine load and low stream flow of the rivers. Upstream from the major salt-pollution areas, fish are somewhat more abundant than elsewhere. Among the species represented are large-mouth bass, channel catfish, green sunfish, and minnows.

Amphibians are not abundant in the area. The few species represented are not adapted to the local saline environment, and are dependent upon temporary water or ponds or lakes in order to reproduce.

Reptiles are relatively common. Of the species collected, 6 are turtles, 12 are lizards, and 30 are snakes.

Birds are remarkably abundant, 234 species having been recognized in the region. Many of these are migrants rather than inhabitants of the region. Included in the extensive checklist are whistling swan, Canadian goose, mallard, teal, heron, plover, hummingbird, and grackle. The probable nesting residents include hawk, quail, owl, woodpecker, wren, sparrow, and crow.

Among the 40 species of mammals in the area are raccoon, bat, mouse, fox, coyote, cottontail, bobcat, and white-tailed deer. Small mammal species are far more abundant than are large species.

The invertebrate population is relatively small, probably due to the high salt content of the water. Those found are mostly crustaceans and insects. No mollusks or annelids were located.

SUMMARY

Assuming that the local environment has not altered substantially since prehistoric times, then it is obvious that plant and animal food resources were adequate for the original inhabitants of the area. It also appears that adequate resources for clothing, shelter, fuel, and tools are available. There are major drawbacks to habitation of the region, however, including salt-laden water and extremely high summer daytime temperatures. Since adjoining areas are somewhat cooler in summer, and fresh water is much more readily available, it is not unlikely that the upper Wichita drainage area was sparsely occupied during most of prehistoric time.

III. ARCHEOLOGICAL BACKGROUND

The purpose of this section of this report is to provide a context for reporting our archeological work in King and Knox counties by reviewing briefly the progress of archeological studies in the Osage or Rolling Plains around the project area, and into the bordering Llano Estacado to the west, the Edwards Plateau to the south, the Cross Timbers to the east, and the Wichita-Arbuckle mountains to the north.

Until recent years, virtually no systematic archeological investigations have been done in the Rolling Plains region of north-central Texas and southwestern Oklahoma, and very few written reports have been available. With an increase in salvage archeology in the region beginning in the early 1970s, a number of studies have been undertaken and the results published, but as yet no synthesis of the regional prehistory has been attempted.

Although a cultural sequence has not yet been established for the Rolling Plains, partial sequences, at least, have been established for each of the surrounding regions. These surrounding regional sequences fit into a framework of four successive stages of cultural development - PaleoIndian, Archaic, NeoIndian, and Historic. It may be assumed that the same stages are represented in the Rolling Plains. Each of these stages is characterized below, and for each stage, the progress of archeological studies in the Rolling Plains around the project area, and in the surrounding regions, is reviewed in very summary fashion. Locations of sites mentioned by name are shown in Figure 5.

THE PALEOINDIAN STAGE

This stage began about 10,000 B.C. and ended about 5,000 B.C. The Clovis, Folsom, and Plano cultures of this stage were based on hunting of Pleistocene big-game animals, and

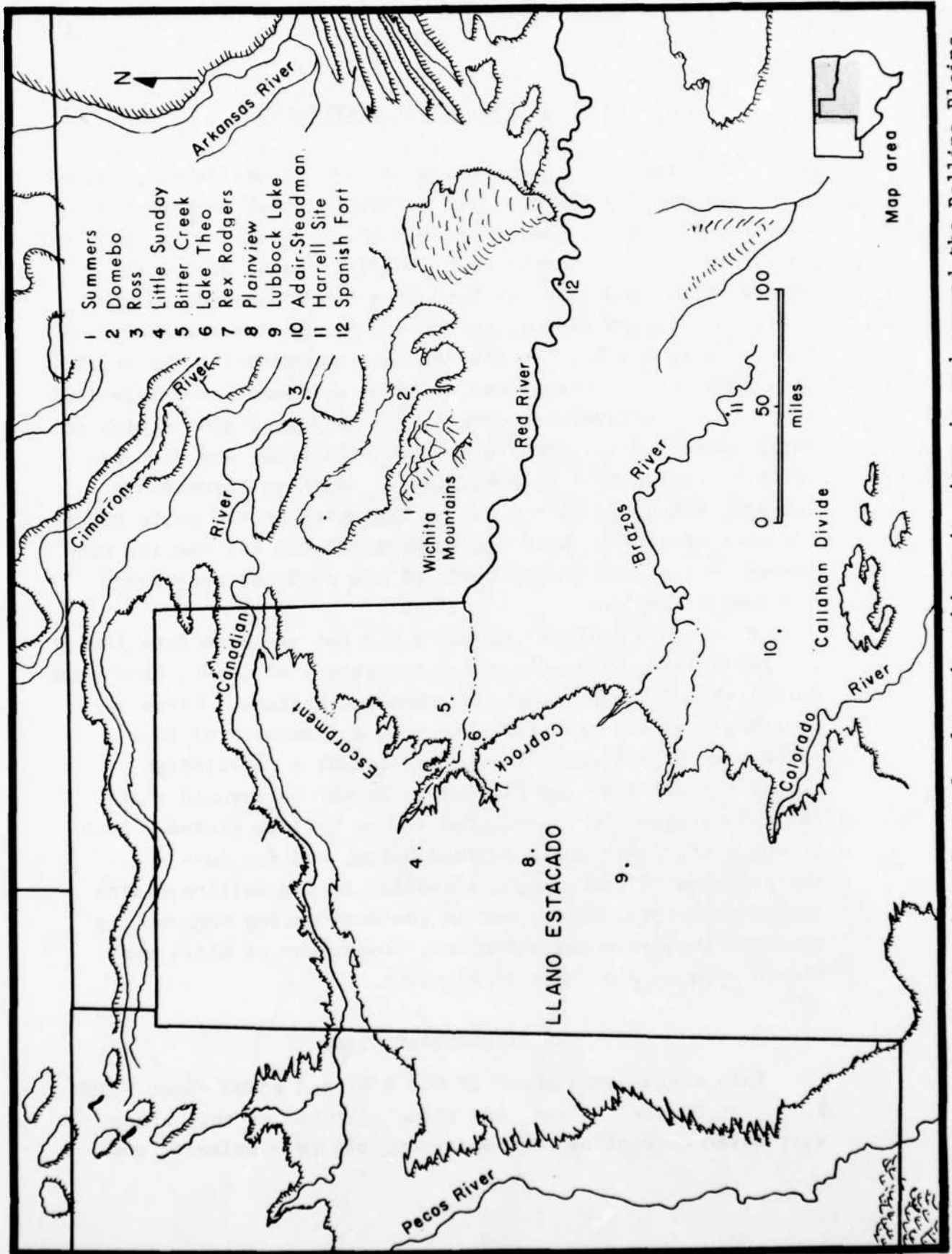


Figure 5. Map showing locations of selected prehistoric sites in and around the Rolling Plains.

are characterized by distinctive forms of lanceolate projectile points.

Relatively few PaleoIndian sites that are located well inside the Rolling Plains area have been investigated. One of these is the Adair-Steadman Site of Folsom affiliation (Tunnell 1975) in Fisher County to the southwest of the project area.

In or near the edge of the Llano Estacado to the west, several PaleoIndian sites have been excavated: the Lubbock Lake Site (Johnson 1976), a stratified multicomponent site in Lubbock County; the Plainview Site (Sellards et al 1947), a Plano bison kill in Hale County; the Lake Theo Site (Harrison and Smith 1975), a primarily Folsom site in Briscoe County; and the Rex Rodgers Site (Hughes and Willey in press), a bison kill of uncertain affiliation in Briscoe County.

Along the edge of the Edwards Plateau to the south, evidence of early man has been reported by Bryan and Ray (1938), Witte (1942), Crook (1955), Wormington (1957), and Suhm (1960).

In the Cross Timbers to the east, Clovis and Plainview points have been reported from components of the Archaic Carrollton Focus by Crook and Harris (1952) and by Suhm et al (1954: 75).

To the north in Oklahoma, the Domebo Site, a Clovis mammoth kill in Caddo County, has been reported (Leonhardy 1966a).

In the project area, evidence of PaleoIndian occupation is very limited. A few PaleoIndian projectile points are present in collections of local amateurs, and a few fragments of possible early points were collected during the present study.

THE ARCHAIC STAGE

The Archaic or MesoIndian Stage began about 5,000 B.C. and ended about 500 A.D. Archaic cultures were based on hunting and gathering. In northwestern Texas the Archaic campsites are usually marked by quantities of hearth stones and boiling pebbles. Earlier sites may be characterized by limited numbers of variable dartpoints, and an abundance of gouges, choppers, and hammers, while later sites may be characterized by corner-indented and corner-notched dartpoints, ovate to trianguloid knives, thick end scrapers, small manos, and thin grinding slabs (Hughes 1976).

There is abundant evidence of Archaic occupation in the Rolling Plains of Texas, and many Archaic sites have been reported, although few have been excavated. Like the sites in King and Knox counties, the sites in surrounding counties are mostly in areas of broken terrain and unpalatable water, and tend to be small open camps or workshops. Included in this group are sites in Cottle and Foard counties (Hughes 1972; Kegley 1977); Baylor and Throckmorton counties (Malone and Briggs 1970); and Kent and Stonewall counties (Skinner 1973).

To the west and northwest, along the western edge of the Rolling Plains and into the canyons along the eastern scarp of the Llano Estacado, Archaic sites or sites with Archaic components, mostly small open camps and workshops, have been reported in Dickens County (Word et al 1966; Parsons 1967); Crosby County (Parsons 1967); Motley County (Word 1970); Floyd County (Word 1963, 1965; Guffee 1976); Hall County (Hughes 1973; Hughes and Hood 1976); Briscoe County (Malone 1970; Willey and Hughes 1975; Katz and Katz 1976; Etchieson et al 1977; Hughes and Willey in press); Donley County (Hughes 1959); Armstrong County (Hughes in press); and Randall County (Hughes 1955; Pearson 1974; Wedel 1975; Hughes in press). Excavations at late Archaic bison

kills in Hall and Collingsworth counties have been reported by Tunnell and Hughes (1955) and D. Hughes (1977).

The Archaic Stage in northwestern Texas has recently been reviewed by Hughes (1976). A sequence of Archaic cultures for this part of the state has not yet been established, but the Bitter Creek Site (Hughes and Hood 1976) in Hall County seems to represent an early Archaic complex, while the Little Sunday Site (Hughes 1955) in Randall County may represent a late Archaic complex.

To the south of the project area, along the Brazos River drainage in the southern part of the Rolling Plains and into the Edwards Plateau, an Archaic Edwards Plateau Aspect has been proposed on the basis of much work for a long time at many widely separated locations (Suhm et al 1954: 102-112; Suhm 1960). The Edwards Plateau Aspect includes C. N. Ray's Clear Fork Culture (Ray 1929, 1938, 1945, 1948), E. B. Sayles' Edwards Plateau Culture (Sayles 1935), and J. C. Kelley's Clear Fork, Round Rock, and Uvaldi foci (Kelley 1947). The Edwards Plateau Aspect is characterized by burned rock middens, a wide variety of dartpoints, and various other traits. Largely on the basis of projectile point types, Weir (1976a) has recently proposed a sequence of five phases for the Archaic of central Texas - San Geronimo, Clear Fork, Round Rock, San Marcos, and Twin Sisters. Gouges appear to be characteristic of the earlier phases (Hughes 1975).

In the Cross Timbers country to the east of the project area, the Archaic Stage has been divided into an earlier Carrollton Focus and a later Elam Focus in the upper Trinity River drainage by Crook and Harris (1952); see also Suhm et al (1954: 76-80) and McCormick (1976).

In the Rolling Plains to the north of the project area, in the Texas part of the Red River drainage, Archaic sites have been reported in Collingsworth, Childress, and Cottle counties (Hughes 1973), but few are known in Hardeman and

Wilbarger counties. Across the Red River in southwestern Oklahoma, several Archaic sites or sites with Archaic components have been reported. These include the Summers Site in Greer County (Leonhardy 1966b) and the Ross Site in Caddo County (Hofman 1971). Other Archaic occupations in southwestern Oklahoma are reported by Burton and Burton (1971), Hofman (1973), Hughes (1973), and Spivey et al (1977).

The Summers Complex as proposed by Leonhardy (1966b: 30-32) includes dartpoints, thin knives, Clear Fork gouges, and numerous tools made of Ogallala (Potter) chert. The complex strongly resembles Archaic sites in the Truscott Reservoir area, but differs in its lack of hammerstones, which are common in the Truscott sites.

Most of the sites in the project area are Archaic sites. Gouges and dartpoint typology indicate occupation of the area throughout the Archaic Stage.

THE NEOINDIAN STAGE

This stage began about 500 A.D. and ended with the arrival of Europeans in 1541 A.D. The hunting and gathering subsistence of NeoIndian cultures was usually supplemented with horticulture. The cultures are characterized by pottery and/or arrowpoints.

Evidence of NeoIndian occupation in the Rolling Plains of Texas is far less common than Archaic evidence. Except for occasional village sites along the Red and Brazos rivers, NeoIndian evidence is usually in the form of isolated finds of arrowpoints. In the Rolling Plains immediately around the project area, NeoIndian finds are reported from Foard County (Kegley 1977) and Stonewall County (Poteet 1938; Skinner 1973).

Along the eastern scarp of the Llano Estacado to the southwest, west, and northwest of the project area, NeoIndian sites have been reported from most of the counties on or near

the scarp: Mitchell (Shawn 1971); Howard (Sommer 1971); Scurry (Portis and Bills 1968); Borden (Quinn and Holden 1949); Kent (Long 1959); Garza (Runkles 1964; Riggs 1966); Dickens (Word et al 1966; Parsons 1967); Crosby (Parsons 1967); Motley (McFarland 1968; Word 1970); Floyd (Word 1963, 1965); Hall (Hughes 1973; Hughes and Hood 1976); Briscoe (Malone 1970; Willey and Hughes 1975; Katz and Katz 1976; Etchieson et al 1977; Hughes and Willey in press); Swisher (Malone 1970; Hughes and Willey in press); Donley (Witte 1955; Hughes 1959); Armstrong (Hughes in press); and Randall (Wedel 1975; Hughes in press).

Along the Eastern Caprock Escarpment, the earlier NeoIndian components appear to be characterized by barbed arrowpoints, sometimes accompanied by Mogollon plain brown ware, while later components are characterized by triangular arrowpoints, usually accompanied by a variety of Mogollon and Anasazi painted wares, and sometimes by Caddoan and other wares. In the northern part of the scarp, an early NeoIndian culture, for which the name "Palo Duro complex" has been proposed (Hughes and Willey in press), is characterized by base-notched Deadman and corner-notched Scallorn arrowpoints, often accompanied by Mogollon plain brown ware. Components of the later and better-known Panhandle Aspect (Krieger 1946), which centered on the Canadian River along the northern edge of the Llano Estacado, extended southward along the Eastern Caprock Escarpment at least as far as Motley County. Components of the Panhandle Aspect are characterized by triangular Fresno, Washita, and Harrell arrowpoints associated with rock-tempered Borger Cord-marked pottery. Along the southern part of the scarp, the later NeoIndian components often have the pointed-stem Perdiz arrowpoints and bone-tempered Leon Plain pottery typical of the Toyah Focus of the Edwards Plateau to the south.

To the south of the project area, along the Brazos River drainage in the southern part of the Rolling Plains, two Neo-Indian complexes (an earlier Brazos Culture and a later Valley

Creek Culture) have been defined by Ray and Sayles (1941), but the definitions have been questioned by Krieger (1946: 132-137) and Suhm (1960: 77-78). Further southward into the Edwards Plateau, a NeoIndian Central Texas Aspect is recognized, with an earlier Austin Focus characterized mainly by Scallorn arrowpoints, and a later Toyah Focus characterized mainly by Perdiz arrowpoints and Leon Plain pottery (Suhm 1960: 83; Shafer 1977).

Toward the Cross Timbers to the east of the Rolling Plains, the stratified multicomponent Harrell Site (Hughes 1942) in Young County is the type site for the Henrietta Focus of Krieger (1946). The Henrietta Focus is characterized mainly by Fresno, Washita, and Harrell arrowpoints with shell-tempered Nocona Plain pottery. Several NeoIndian village sites in the Brazos and Red River drainages of the Rolling Plains have been assigned to the Henrietta Focus by Krieger.

Along the Red River drainage of the Rolling Plains in Texas to the north of the project area, NeoIndian sites have been reported in Collingsworth and Childress counties (Hughes 1973), Cottle County (Sharp 1969), Hardeman County (McFarland 1968), and Wilbarger County (Crawford 1975). Further northward, across the Red River in the Rolling Plains of southwestern Oklahoma, where considerable work has been done in NeoIndian sites, the NeoIndian Stage is subdivided into an earlier Plains Woodland substage and a later Plains Village substage, and several culture complexes have been defined. The Plains Woodland Pruitt Complex is followed by a transitional Custer Focus which is followed in turn by the Plains Village Washita River Focus (Lintz 1974). The latter complex may be closely related to the Henrietta Focus in the Rolling Plains of Texas (Spivey et al 1977: 11-14).

NeoIndian sites are rare in the project area. Of 65 archeological sites recorded, only six sites produced arrowpoints. Only one of these sites, 41KX26, also possessed pottery.

THE HISTORIC STAGE

In and around the Rolling Plains area, the Historic Stage of Indian cultural development began with the arrival of Europeans in 1541. Although this stage has been much studied historically and ethnographically, it is only beginning to receive the archeological attention that it deserves.

Little if any historical information on the Rolling Plains around the project area is available until the 1700s, when the principal inhabitants appear to have been nomadic Comanches from the northwest and sedentary Wichitas from the northeast. It has been suggested (Hughes 1942, 1968) that the prehistoric Henrietta Focus may have become the historic Kichais, who eventually joined the Wichitas. Nomadic Apaches from the northwest may have lived in the western part of the Rolling Plains during late prehistoric and early historic times, until driven southward by the Comanches and Wichitas in the 1700s. In and around the project area, little evidence of historic Indian occupation has been found except for a few surface finds of White trade items, and an occasional burial with materials of this kind.

Along the Eastern Caprock Escarpment bordering the Rolling Plains to the west, probable Apache sites have been reported to the north in Randall and Armstrong counties (Hughes in press) and in Briscoe County (Katz and Katz 1976). These sites are characterized mainly by small triangular arrowpoints accompanied by thin, dark, plain, often micaceous pottery and late Anasazi painted wares. Along the southern part of the scarp, sites in several counties have produced Garza arrowpoints, a triangular form with a single base-notch, associated with pottery like that of the northern sites, and it has been suggested (Johnson et al 1977) that the Garza complex may be Apache.

Comanche sites in the Llano Estacado have received little attention. Excavations at the Sand Pit Site, a probable Comanche camp of the late 1700s in Briscoe County, have been reported by Hughes and Willey (in press), and several probable Comanche burials have been investigated (Word and Fox 1975).

In the northern part of the Edwards Plateau to the south of the Rolling Plains, little work seems to have been done at historic Indian sites, but it has been suggested (Suhm 1960) that the prehistoric Austin and Toyah foci may have given rise to the historic Tonkawas and Jumanos of the Edwards Plateau.

In and near the Cross Timbers area to the east of the Rolling Plains, and in the Rolling Plains of western Oklahoma, several historic Wichita village sites have been investigated. The best known of these is the Spanish Fort Site north of Nocona, Texas on both sides of the Red River at the western edge of the Western Cross Timbers (Bell et al 1967). A Norteño Focus has been proposed for the historic Wichita components (Duffield and Jelks 1961).

IV. HISTORICAL BACKGROUND

by Pollyanna B. Hughes

The historical investigation undertaken as part of the Truscott Reservoir Project revealed that there is nothing of historic significance, as that term is defined in Federal guidelines,¹ which is threatened by the proposed reservoir or the associated pipeline and pump station. There are items of historic interest, particularly to the local people, but nothing the loss of which would be an impediment to reconstruction of the history of the area.

An effort to trace that history, with emphasis on the localities affected by the Truscott Reservoir Project, started with published accounts of the region. Search was made in libraries at West Texas State University and neighboring institutions. Archives at the Panhandle-Plains Historical Museum in Canyon and the Southwest Collection at Texas Tech University in Lubbock were examined, but neither archival repository contained much information about the history of King and Knox counties, Texas, where the project is underway. Local people were visited and interviewed by both the historian and the archeological personnel on the project. Those interviews were helpful in supplying information and leads to additional printed sources or archival material in the possession of individuals.

King and Knox counties are in the geographic area known in Texas as the Rolling Plains, the Red Plains, or the Osage Plains. Since the terrain is rough and composed of what local people call "brakes" or "breaks" of the many tributaries of the Big and Little Wichita Rivers, early travelers were not lured as easily to routes through this maze as to the broader and more easily-followed streams which led into other areas. The fact that many of the streams of the region are "gyp" or salty in content also discouraged exploration and early

development. As the archeologists and earlier historians discovered, even the native Americans tended to avoid the region, passing through it on occasion and camping briefly when on hunting trips into the vicinity. So far as records which were examined showed, the earliest recorded explorer to enter the region was José Mares, who wrote a diary of a trip from Santa Fe to San Antonio and return in 1787-1788. From the diary, scholars concluded that, on his return from San Antonio to Santa Fe, he came through the Rolling Plains.² Mares was followed in 1789 by Pedro Vial, who also made a trek from San Antonio to Santa Fe via what Noel M. Loomis and Abraham P. Nasatir think was a route via the vicinity if not the actual passage in Knox County known as "The Narrows."³ The diaries of Mares and Vial are not extensive enough to represent any great contribution to knowledge of what the land was like in 1788 and 1789.

Although no records specifically show that it was so, it seems entirely likely that New Mexicans were familiar with the King-Knox County area even before the time of the Vial and Mares journeys. Not too much later than that, every explorer anywhere near the area ran into New Mexicans who claimed familiarity with all of West Texas. Hugh Glenn was one who, in 1821, experienced such an encounter. Glenn was licensed to trade with Indians from posts on the Verdigris, the head of the Arkansas River, and other points. As far north as Colorado, Glenn camped with Indians who had a Spaniard from San Antonio with them.⁴ He had certainly seen much of the country between San Antonio and Colorado as a companion of nomadic Indians.

Some authorities have concluded that the Chihuahua traders of 1839 passed through the Rolling Plains near present Seymour, Benjamin, Aspermont, and Snyder, possibly through the "Narrows."⁵ This was a party of traders with

more than 500 mules and 7 wagons, their route--whatever its details--taking them from Chihuahua, Mexico, to Fort Towson north of Red River.⁶ Such a party would have left a good trail, and Kendall, in 1841, writing of his experiences with the Texan-Santa Fe Expedition, said that the expedition passed the trail left by the Chihuahua traders soon after going through the Cross Timbers.⁷ Kendall's location of the trail would place the Chihuahua traders considerably east of the "Narrows."

The Texan-Santa Fe Expedition of 1841 did pass through both King and Knox counties, and H. Bailey Carroll spent a great deal of time and effort to pinpoint every location of interest on that expedition's trail.⁸ The expedition was organized to try to extend Texas jurisdiction over the part of eastern New Mexico including Santa Fe and claimed by Texas. Opening of trade between Texas and New Mexico also was a motive for the undertaking. Carroll edited and collated the major accounts of the expedition, and from these accounts comes a good picture of the area as it was in 1841. In the vicinity of the proposed pipeline, for instance, observers saw many prairie dog towns and rattlesnakes "of immense size." "Numbers of deer and antelope" were mentioned.⁹ At a camp on the Middle Fork of the Wichita in northeastern King County, Indians stole some horses from members of the expedition and hunters held talks with a party of Kiowa Indians. Mustang was included in the game killed by the hunters, but "buffalo were seldom seen."¹⁰ Wolves frequently howled near the camps. The guide for this expedition was a Mexican, Carlos, who claimed great familiarity with the entire area because of having hunted there before.¹¹ Repeated attention is called to "gyp" or salt water in springs or streams, but horses "drank their fill."¹² See Figure 6.

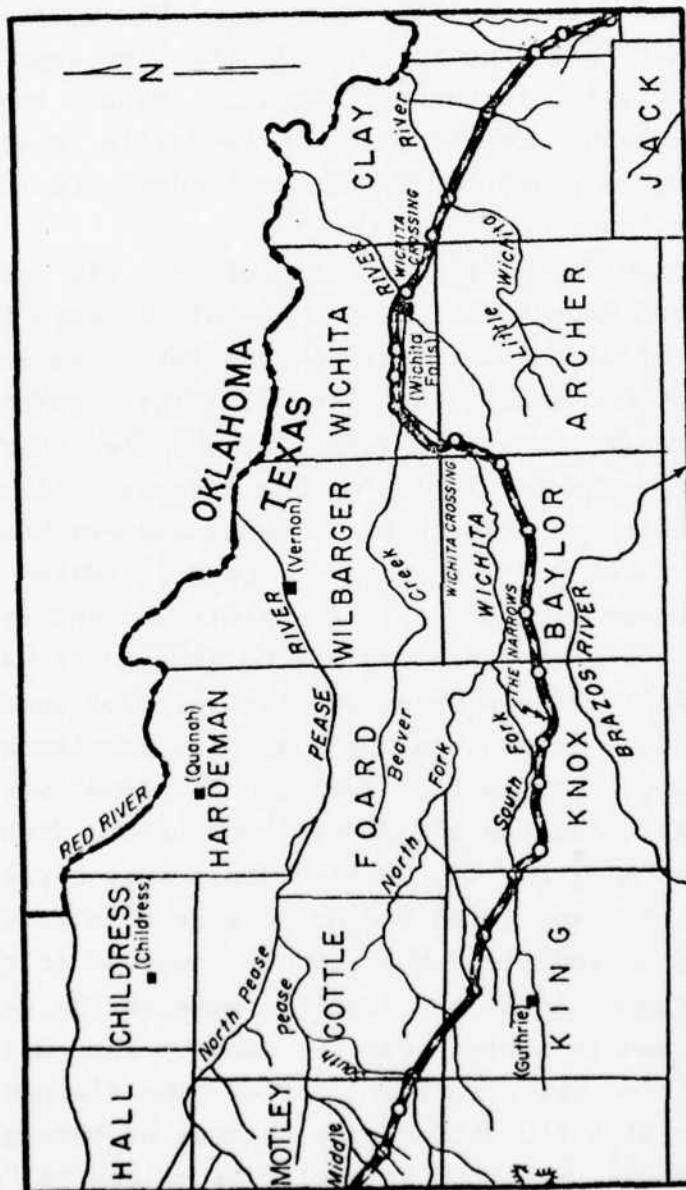


Figure 6. Map showing route of Texan Santa Fe expedition of 1841 across the Truscott Reservoir project area. From H. Bailey Carroll, *The Texan Santa Fe Trail (Canyon, Texas: Panhandle-Plains Historical Society, 1951)*, p. 86.

A few years later, in 1849, Lieut. Nathaniel Michler of the U.S. Topographical Corps passed through the King-Knox County area while seeking a road to connect forts along Red River with settlements on the Rio Grande. He described the rough terrain of the Wichita and its tributaries with "brackish" water, noting that he, too, passed through the "Narrows." Michler was accompanied by 14 men, all civilians, with wagons. After they left Red River to go southwestward toward the Wichita, they met several groups of Indians which Michler identified as "Shawnees, Delawares, Tongues, & C." The Comanches and Tongues, he said, united to chase buffalo above the Big Wichita. The Indians did not bother the travelers.¹³

Good descriptions of the Rolling Plains were left by Randolph Barnes Marcy and Robert Simpson Neighbors, who examined the area in 1854. Marcy was with the U.S. Topographical Corps and Neighbors was United States Superintendent of Indian Affairs for Texas. They were commissioned to examine the country of western Texas to locate land which might be suitable for reservations for Indians of Texas. From Texas Land Office maps, they determined that all the good land had been claimed by individuals or corporations except that in the upper drainages of the Wichita and Brazos rivers. They came to the area in midsummer--leaving Fort Belknap in Texas July 12. They described the "Narrows," the brackish water, and the presence of game such as deer and antelope. Their accounts do not mention buffalo. Neighbors located a site near Seymour where he said he had spent several weeks as the guest of the Comanche chief, Mokechope. By July 30, when a small group scouting out from the main party had gone well beyond the "Narrows," Marcy said the men were all sick with diarrhoea, the mid-day temperature was 106 degrees, and they decided to turn back.¹⁴ Marcy was shocked that a surveyor he met in these

"wilds" had no conception of the need to find the magnetic variation of a compass in order to assure accuracy in his work.¹⁵ Marcy reported "rich specimens of the blue carbonate of copper and near this a rich vein of iron ore, 15 feet in thickness, of exceedingly rich quality," at the base of a very prominent mound of peculiar shape.¹⁶ The subsequent geological report on Marcy's specimens did not mention copper.¹⁷

Marcy concluded that he could leave the area without regrets. He described it as barren and desolate, adding that it was:

. . . the most uninteresting and forbidding land I have ever visited. A barren and parsimonious soil, affording little but weeds and coarse unwholesome grass, with an intermixture of cactie [sic] of most uncomely and grotesque shapes, studded with a formidable armour of thorns which defies the approach of man or beast, added to the fact . . . of the scarcity of good water, would seem to render it probable that this section was not designed by the Creator for occupation, and I question if the next century will see it populated by civilized man. Even the Indians shun this country, and there was no evidences of their camps along the valley; so that the bears (which are numerous here) are left in undisturbed possession.¹⁸

The surveyor Marcy met was followed soon by others. Jacob de Cordova, who had a land firm in Houston, spent one year--1856-1857--surveying an area centered on the present towns of Seymour, Benjamin, and Clairemont.¹⁹ His major contribution seems to be that he foresaw the use of the Rolling Plains for cattle-raising.

In 1858, the Texas Legislature created the county of Knox.²⁰ Soon after that, Isom Lynn's father was traveling from King County eastward when he and his party had a fight with Indians near the site of present Guthrie, Texas. An Indian was killed in the battle and early settlers in the county said they knew the location of the grave.²¹

Just as the members of the Texan-Santa Fe Expedition had commented on noticeable trails in the Rolling Plains, so later visitors and residents took note of these. One of these "roads" was reportedly the route followed by General Ranald Mackenzie in 1872 on one of his sorties into the Texas Panhandle to seek out Comanche, Kiowa, Cheyenne, and other Indians who had fled the Oklahoma reservations. The trail was traced running southward across the Brazos River at Mockingbird Springs, 5 miles west of Knox City, and continuing past the old lake a few miles west of Weinert on to the east line of Haskell County and ultimately to Fort Griffin.²² An 1875 traveler said the trail was still very plain then. "You could not cross it in daylight without observing it," he said.²³

Another famous trace that passed near Knox City was the Rath Trail, which went a little west and south of present Guthrie to join the Mackenzie Trail at the Brazos. George W. Robson, editor of the Fort Griffin Echo, traveled this trail in 1879 and called it the "Rath Trail," although recent writers say that it is not called that any longer.²⁴ Clara Brown said that in tracing out old family abstracts, she found a reference to the old Seymour-Fort Elliot road which ran through the Brown ranch across from their present (1978) home.²⁵

Archeological crews working with Meeks Etchieson found a rock "fence" across a tributary canyon at the east end of Site 41KX43 on Bluff Creek. The land owner said that there once was a dugout nearby where glass and metal fragments had been scattered around. Archeologists and local people searched for the dugout but could not find it. The rock "fence" was built almost rim-to-rim in the canyon, and some suggested that this was possibly a "corral" where the canyon itself was used as a natural corral.²⁶ Mrs. Myrtle Murphy of

Crowell said that she had seen the rock "walls," but did not know who built them or why.²⁷

Clara Brown told the archeological crew about what she said was a historical site on the Edgar Jones property. She thought that it was probably an old sheepherders' hut, but she had never seen any artifacts from the ruin.²⁸ Mrs. Brown took the crew to that site July 29, 1977 (Site 41KX66) and studies of it were made by the archeological crew. Etchieson asked several of the townspeople about it, but no one knew what it was.²⁹ Details of the archeological investigations of this site are included in the archeological section of this report.

Many people suggested the possibility that the ruin (Site 41KX66) might be a buffalo-hunter's campsite. Early-day accounts are filled with reports of dugouts' being used for temporary shelter and by 1875 there were a lot of buffalo in the King and Knox County area. Charles Ulrich Connellee, who surveyed a large part of the Rolling Plains in that year reported "vast herds of buffalo" roaming the country.³⁰ A hunter in the same year said his group killed 906 buffaloes while at one camp on Croton Creek.³¹

There were, according to all accounts, thousands of buffalo in the King-Knox County area in the 1870s. Visitors earlier, in 1841 and 1854, for instance, found no buffalo. Evidently the massive hunting of buffalo in the northern plains had pushed the great herds southward first into the Texas Panhandle, then into the Rolling Plains. This last great buffalo hunt in the 1870s and early 1880s in the Rolling Plains finished off the southern herds. When the first ranchers arrived, they noted only occasional small groups of buffalo scattered around the region, and those were soon wiped out.

Ella Elgar Bird, who, at the age of 15 married Tom Bird, a former Texas Ranger, and came with him in 1876 to

what is now King County to hunt buffalo, wrote an account of her experiences. She said the couple with her and her husband built a "little rock house," but she and her husband used what buffalo hunters customarily used--a tepee of buffalo hides. "That was before dugout day," she explained.³² Mrs. Bird, who later became Mrs. Dumont, thought their camp was at the line where Dickens and Cottle counties join, but Ernest Lee, who edited the memoirs for publication, said the camp actually was on Bird Creek, a tributary of the South Fork of the Wichita, 9-1/2 miles from the center of King County.³³ There are some stone ruins on Bird Creek near where the pipeline being built as part of this project crosses that creek. Q. D. Williams of Floydada said he had visited the ruins and they looked like low-walled rock structures, brush-topped with fireplaces in one end of each.³⁴ There are stories of a "Spanish Mission" on Bird Creek,³⁵ but these are by some considered simply legends and by others are considered misunderstandings based upon people's having seen the ruins of the Bird settlement.³⁶ Other dugouts known by local residents were at the site of present Guthrie, where buffalo hunters lived in such a shelter, and three on the Masterson Ranch.³⁷

Knox County was re-created in 1876 from Bexar and Young Territories, and King County was created from Bexar Territory.³⁸ Knox County was named for General Henry Knox, first Secretary of War under the United States Constitution. King County's name honored the memory of William P. King, who was killed at the Alamo.³⁹

One of the earliest settlers in King County was Isom Lynn, who came there in 1877 with friends, John and Aaron Lasater, from Jack County. The Lasaters returned to Jack County, but Lynn stayed and settled east of Guthrie near the present Bateman Ranch.⁴⁰ First regular mail routes were initiated in 1879, and efforts have been made to delineate the "roads" established for that purpose.⁴¹

By 1880, King County claimed 40 residents--all men who listed themselves in the census as cattle-raisers or cowboys.⁴² In that same year, however, Jim Moody arrived to settle in the county and later said that there were shearers at China Lake when he got there.⁴³

Even at this early date, also, there were people employed in copper production in King County. Spanish explorers as early as Francisco Vázquez de Coronado in 1541 had reported the presence of copper in West Texas and limited use of that metal by Indians.⁴⁴ Randolph Barnes Marcy in 1854 had collected ore samples. One authority claims that Marcy sent a wagon load of ore via Fort Smith and New Orleans to Liverpool, England, for smelting and the outturn was sufficient to pay the extraordinarily high costs of the experiment.⁴⁵

George Brinton McClellan accompanied Marcy on his 1852 expedition in search of the headwaters of Red River, and at that time McClellan became convinced that copper was a good mining prospect in West Texas. Early settlers said mining was underway as early as 1878-1879, most of it in the eastern part of the county near the Knox County line. The operations were open-pit mines in which Isom Lynn said as many as 50 men with mule teams were working in 1879.⁴⁶ George Brinton McClellan made a survey of the area in 1877 and, with a company of Chicago capitalists, began mining operations in 1884 with mines in Knox, King, Stonewall, and Hardeman counties (Foard County was later created out of Hardeman County). These mines probably ceased operations by 1887 or 1888.⁴⁷ Some people remember, however, that copper mines were still operating in the King-Knox vicinity as late as 1916.⁴⁸ No relics of this mining industry are located within the areas affected by the Truscott Reservoir Project.

In the years after the Civil War, buffalo hunters and cattlemen made a still-discernible trail through King and

Knox counties which goes via China Lake and some springs in western Knox County.⁴⁹ This trail is on the present Jack W. Brown Ranch at Truscott. Near the trail at China Lake are two graves with markers. Meeks Etchieson recorded these graves as a part of the archeological section of this report.

Early residents, buffalo hunters and later cattlemen, had the same problem people in this region face today--good water for people and animals. China Lake was one of the more dependable water holes in the area, although it never was "much more than a wide, low spot on China Creek."⁵⁰ All through the 1880s, gyp springs, rain holes, and China Lake were the water sources for King County and environs. The earliest ranchers dammed canyons and draws to trap water in "tanks." These often were as much as 25 feet deep and might cover 2 or 3 acres, but a large herd could drain them in a "drouthy" summer.⁵¹ One of the first wells dug in the area was put down by Judge Tom Truscott near his home on the present Benjamin-Truscott road in 1888. Still a good well, this was lined with rock and, later, equipped with a windmill. Bob Myers is believed to have built the first cement cistern in King County, about 1904. Roof gutters with charcoal filters later were used to collect water in cisterns, a system still in use. These cisterns go dry in times where there is too little rain, and Paul Bullion currently trucks water from other localities to fill local cisterns.⁵² No notable relics of the historic efforts to provide water are subject to damage by the Truscott Reservoir Project.

Barbed wire fencing came to the King-Knox County area in the 1880s. Pioneers remembered that antelope crawled under the earliest fences, which used smooth wire on the bottom. Deer jumped over the fences.⁵³

The biggest ranch in the Truscott area is the 6666 headquartered at Guthrie. Bud Arnett assisted in founding the ranch for the Louisville Land and Cattle Company.

Sam J. Lazarus bought it from the original founders, then Samuel Burk Burnett took it over about the turn of the century.⁵⁴ None of the work on the Truscott Reservoir Project involves 6666 land. See Figure 7.

The town of Benjamin got its start in 1885 when Hilory Bedford, who had brought cattle to Knox County a year earlier, divided a section of land and sold lots.⁵⁵ Bedford established the L-Bar Ranch northeast of present Benjamin. A historical marker on the courthouse lawn at Benjamin commemorates the founding of the ranch.⁵⁶ Knox County was organized in 1886.⁵⁷

By the 1890s there were several wells in King County. The early windmills had wooden wheels 12 to 20 feet in diameter. Wells went down 30 to 300 feet and had wooden towers 28 to 30 feet tall. Some of the brands of windmills used on early wells were Eclipse, Star, and Standard. Dempster was used later.⁵⁸ Wells produced mostly gypsum water, but it was all right for stock.⁵⁹ Because of its scarcity and the expense of providing it in any form, water has always been a controversial matter in the Rolling Plains.⁶⁰

King County was organized in 1891 with Guthrie as the county seat. There were about 40 qualified voters at the time,⁶¹ although the total population of the county was about 173.⁶² The population of the county was highest in the 1930 census, when King County had 1,193 people living there. That was at the height of oil prospecting activity, and the first oil production came in 1943, by which time the population was dwindling. In 1970 it had dropped to 464 persons for the entire county.⁶³ Isolation of the area is hinted at in the fact that the County Commissioners'

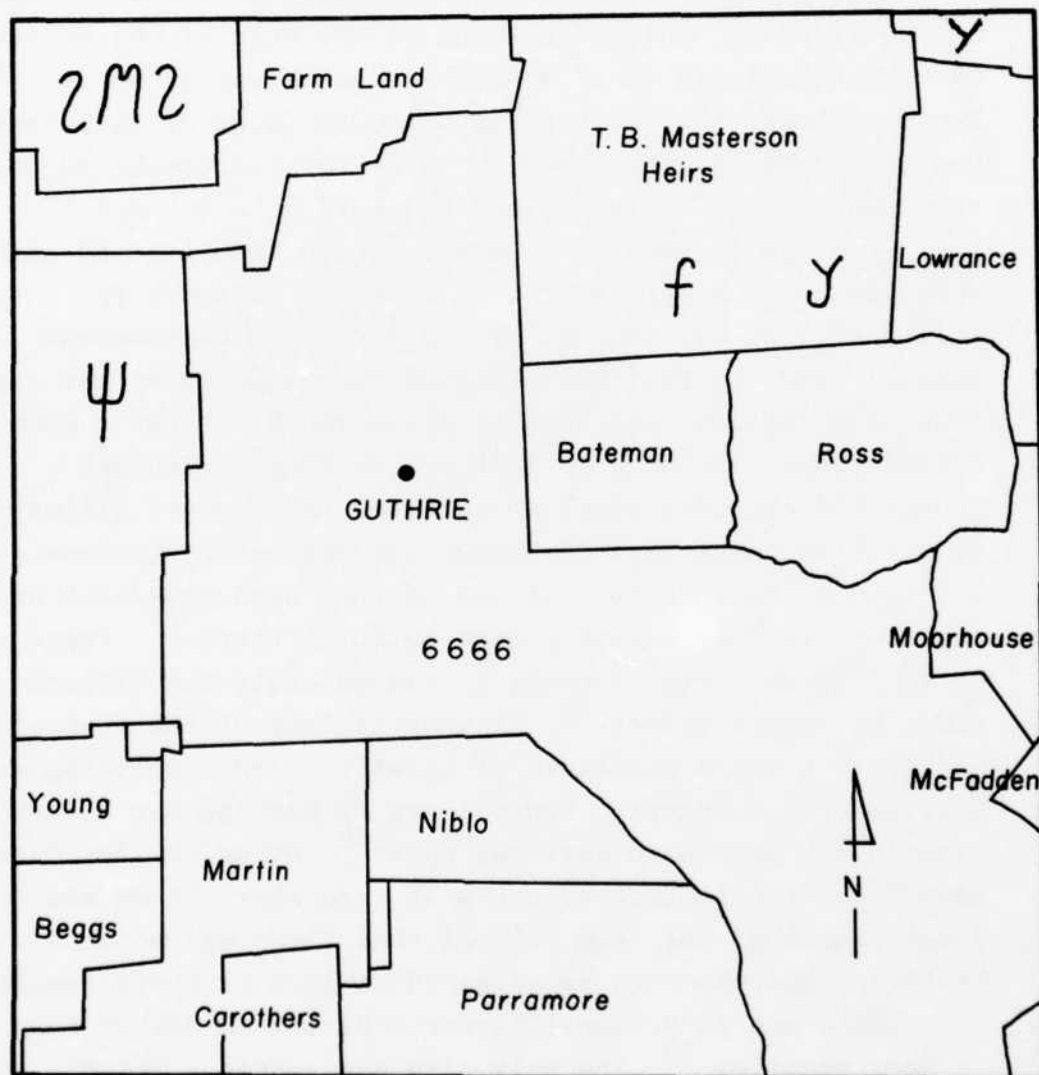


Figure 7. Map of King County ranches. From King County Historical Society, History of King County: Windmills and Barbed Wire (Quanah, Texas, Nortex Press, 1976), p. 43.

Court in 1941 was considering bids for wiring the Courthouse and jail "in preparation for electric service."⁶⁴

A building of historic interest was the stone bunkhouse on the JY Ranch, which was begun at the turn of the century by Robert Benjamin Masterson, whose heirs still own it. The Truscott Reservoir Project does involve lands of this ranch, but the bunkhouse was moved in 1974, and reconstructed at the Ranch Museum at Texas Tech University in Lubbock.⁶⁵

With the fluctuations in population from time to time throughout its relatively brief recorded history, the Rolling Plains has seen the birth and death of numerous towns. About halfway between Knox City and Munday was the town of Gillespie, and about 2 miles south of that a town called Thorp. Nothing is left now of Thorp, although a church and cemetery stand at what was the town of Gillespie.⁶⁶ At one time there were 27 houses and several businesses in the town of Foard City, but all of them were moved out and now there is only a rock church building there.⁶⁷ Pease City, 5 miles north of Crowell, was an early-day village which no longer exists.⁶⁸ At what is left of the town of Margaret, 6 miles northwest of Crowell, a rock building was erected over a dugout. Today there is nothing but a depression in the ground to mark the spot.⁶⁹ Other similar "ghost towns" dot the landscape, but most were short-lived and local people do not seem to feel that there was notable historic importance to be attached to them or their remains.

There are no National Historic Places in either King or Knox counties.⁷⁰ The only site designated a Texas Historic Site in either county which lies outside the city limits of the county seats is "The Narrows," the pass along the divide between the Wichita and Brazos rivers.⁷¹ The

Texas Almanac listing of "Landmarks of Texas" includes nothing in Knox or King counties.⁷²

By any standards of judging historic significance, there seems to be no site within the Truscott Reservoir Project which would be damaged by the work underway. Nothing which contributes to the overall history of the area will be impaired by the work. If it is possible to determine use made of the partially-dugout stone ruin on Bluff Creek (Site 41KX66), the information could be useful in preserving the story of how particular people survived in their earliest encounters with the environment of the Rolling Plains. Dugouts were a common answer to the problem of shelter, and few of these have been preserved for present generations. Even detailed descriptions of them are rare. If Mrs. Dumont, the bride of the buffalo-hunter in 1876, was correct, the dugout on Bluff Creek postdates the great buffalo hunt of that time. Frequent references throughout history of Mexicans in the area and knowledgeable of the area lead to the possibility that the ruin, as well as the rock walls or "corral" in the Truscott vicinity, could have been the work of Mexican comancheros or sheepherders who preceded Anglos in the Rolling Plains. Since dugouts which were proved to be remains of comanchero outposts have been found near Quitaque,⁷³ and stone walls and "plazas" of Mexican construction dot the Canadian River to the north, the combination of a dugout with rock construction would be compatible with Mexican customs. Identification and dating of the cartridge shells found in the Bluff Creek ruin will no doubt help to place the time of occupancy. Records of the structure will be preserved through the archeological study made as a part of this project.

The Truscott Reservoir Project poses no threat to conservation of the historic heritage of the area in which the project is being undertaken.

NOTES

1. "Executive Order 11593, Protection and Enhancement of the Cultural Environment," Federal Register 36 (May 13, 1971): 8921; Guidelines for the Evaluation of Impacts Upon Cultural (Historic, Archeological, Architectural) Resources, National Park Service, March 8, 1973; Harley J. McKee, "Recording Historic Buildings," Historic American Buildings Survey, Office of Archeology and Historic Preservation, National Park Service, Washington, D.C.; Moss-Bennett Bill (Public Law 93-291) of 1974; National Antiquities Act (34 Stat. 225) of 1906; National Historic Preservation Act (80 Stat. 915) of 1966; National Historic Sites Act (49 Stat. 666) of 1935; U.S. Department of the Interior, National Park Service, "National Register of Historic Places," Federal Register (March 15, 1972): 5428-5430.
2. Noel M. Loomis and Abraham P. Nasatir, Pedro Vial and the Roads to Santa Fe (Norman: University of Oklahoma Press, 1967), 292; Clara Brown, "Historic Efforts to Solve the Water Problems in the Wilds of the Wichitas," West Texas Historical Association Year Book 49 (1973): 71.
3. Loomis and Nasatir, Pedro Vial, 266.
4. Jacob Fowler, Journal of Jacob Fowler Narrating an Adventure from Arkansas . . . to the Sources of the Rio Grande del Norte, 1821-22. Edited by Elliot Coues. (New York: F. P. Harper, 1898; reprint edition Lincoln: University of Nebraska Press, 1970), 59.
5. Walter Prescott Webb, ed., The Handbook of Texas, 3 vols. (Austin: Texas State Historical Association, 1953, 1976), vol. 1, p. 338.
6. Thomas Maitland Marshall, "Commercial Aspects of the Santa Fe Expedition," Southwestern Historical Quarterly 20 (1917): 244.

7. George W. Kendall, Narrative of an Expedition Across the Great Southwestern Prairies from Texas to Santa Fe. 2 vols. (London: David Boque, 1845), vol. 1, p. 129.
8. H. Bailey Carroll, The Texan Santa Fe Trail (Canyon, Texas: Panhandle-Plains Historical Society, 1951), passim.
9. Kendall, Narrative, vol. 1, p. 201.
10. Ibid., pp. 201, 212.
11. Carroll, The Texan Santa Fe Trail, p. 183.
12. Kendall, Narrative, vol. 1, p. 189.
13. N. Michler, Report on Reconnaissance. September 11, 1849. U.S. Cong., 31st Cong., 1st Sess., Sen. Exec. Doc. 64 (1850) [Serial 562], pp. 33-34; William H. Goetzmann, Army Explorations in the American West 1803-1863 (New Haven: Yale University Press, 1959), p. 234.
14. Randolph Barnes Marcy, Report of an Expedition to the Sources of the Brazos and Big Wichita Rivers, during the Summer of 1854, by Captain R. B. Marcy, 5th Infantry, January 15, 1855. U.S. Cong., 34th Cong., 1st Sess., Sen. Exec. Doc. 60 [Serial 821], pp. 2-10; Randolph Barnes Marcy and Robert Simpson Neighbors, "Report of R. B. Marcy and R. S. Neighbors to P. H. Bell, Fort Belknap, Texas, September 30, 1854," pp. 186-193. Indian Papers of Texas and the Southwest. 5 vols. Edited by Dorman H. Windrey and James M. Day (Austin: Pemberton Press, 1966), vol. 1, 186-187; Kenneth Franklin Neighbours, "The Marcy-Neighbors Exploration of the Brazos and Wichita Rivers in 1854," Panhandle-Plains Historical Review 27 (1954): 27-36; Averam B. Bender, The March of Empire: Frontier Defense in the Southwest, 1848-1860 (Lawrence: University of Kansas Press, 1952; reprint edition New York: Greenwood Press, 1968), p. 95.
15. Randolph Barnes Marcy, The Prairie Traveler: A Hand-Book for Overland Expeditions (New York: Harper and Brothers, 1859), pp. 186-187.

16. Marcy, Report of an Expedition, p. 8.
17. W. P. Blake, Notice of the Geological Collection, Washington, June, 1856, pp. 26-47. Randolph Barnes Marcy, Report of an Expedition to the Sources of the Brazos and Big Wichita Rivers, During the Summer of 1854, by Captain R. B. Marcy, p. 46.
18. Marcy, Report of an Expedition, pp. 10-11.
19. James M. Day, "Jacob de Cordova's Exploration of Northwest Texas," West Texas Historical Association Year Book 34 (1958): 20.
20. Texas Almanac 1964-1965 (Dallas: A. H. Belo Corporation, 1963), pp. 64-65, p. 241.
21. King County Historical Society, King County: Windmills and Barbed Wire (Quanah, Texas: Nortex Press, 1976), p. 53.
22. Mrs. Virgil Johnson and J. W. Williams, "Some Northwest Texas Trails after Butterfield," West Texas Historical Association Year Book 42 (1966), pp. 78-79.
23. John R. Cook, The Border and the Buffalo: An Untold Story of the Southwest (Topeka, Kansas: Crane and Company, 1907; reprint edition New York: Citadel Press, 1967), p. 192.
24. Johnson and Williams, "Some Northwest Texas Trails," pp. 78-79.
25. Clara Brown to Pollyanna B. Hughes, March 8, 1978.
26. Meeks Etchieson, Field Trip Records, 1977. Archeological Research Laboratory, Killgore Research Center, West Texas State University, Canyon, Texas, July 29, August 1, 1977.
27. Mrs. Myrtle Murphy to Pollyanna B. Hughes, March 8, 1978.
28. Etchieson, Field Trip Records, July 29, August 1, 1977.
29. Ibid., May 26, 1977.
30. C[harles] U[lrich] Connellee, "Some Experiences of a Pioneer Surveyor," West Texas Historical Association Year Book 6 (1930); 14.

31. Cook, The Border and the Buffalo, p. 179.
32. Ella Dumont, "A Woman on the Buffalo Range," edited by Ernest Lee, West Texas Historical Association Year Book 40 (1964): 148.
33. Ibid., note, p. 146.
34. Clara Brown to Pollyanna B. Hughes, March 8, 1978.
35. Etchieson, Field Trip Records, May 17, 1977.
36. Ibid.
37. Leann Cox Adams, "Winning Hand: Burk Burnett of the 6666 Ranch" (M.A. thesis, Texas Christian University, 1969), p. 54; Roberta Speer, Field Trip Records, Archeological Research Laboratory, Killgore Research Center, West Texas State University, Canyon, Texas, May 17, 1977.
38. Texas Almanac 1964-65, pp. 240-241.
39. Ibid.
40. King County Historical Society, King County, p. 6.
41. Johnson and Williams, "Some Northwest Texas Trails," pp. 70-74, p. 84.
42. King County Historical Society, King County, p. 9.
43. Clara Brown to Pollyanna B. Hughes, March 8, 1978.
44. Floyd E. Ewing, Jr., "Copper Mining in West Texas: Early Interest and Development," West Texas Historical Association Year Book 30 (1934): 18.
45. Ibid., p. 19.
46. King County Historical Society, King County, p. 4.
47. Ewing, "Copper Mining," pp. 22-28.
48. Etchieson, Field Trip Records, May 17, October 24, 1977.
49. Brown, "Historic Efforts," p. 71; Mrs. Brown said that China Lake and China Creek take their names from the chinaberry trees growing on their banks.
50. Clara Brown, "Dusty Trails Left Cowmen Thirsty," Wichita Falls Times, August 29, 1965; copy in Knox County Historical Survey Committee Scrapbook (Knox County Courthouse, Benjamin, Texas).

51. King County Historical Society, King County, p. v.
52. Brown, "Dusty Trails."
53. King County Historical Society, King County, p. vii.
54. Ibid., pp. 26-29.
55. J. O. Jones, A Cowman's Memoirs (Fort Worth: Texas Christian University Press, 1953), p. 69; Webb, editor, The Handbook of Texas, vol. 1, p. 147.
56. Knox County Historical Survey Committee, Scrapbook (Knox County Courthouse, Benjamin, Texas).
57. Texas Almanac 1964-65, p. 241.
58. King County Historical Society, King County, p. v.
59. Margaret Elliot, "History of D. B. Gardner's Pitchfork Ranch of Texas," Panhandle-Plains Historical Review 18 (1945): 57.
60. Brown, "Historic Efforts," p. 77.
61. Elliot, "History of D. B. Gardner's Pitchfork Ranch," p. 28.
62. King County Historical Society, King County, p. 9.
63. Ibid.
64. Ibid., p. 13.
65. Ben Masterson, "The JY Cattle Brand," Panhandle-Plains Historical Review 16 (1943): 51; King County Historical Society, King County, p. 32.
66. Belle Maxine Burnison Hipple, comp. and ed., Legacy of the Knox County Prairie: A History of Gillespie-Thorp Communities (Austin: San Felipe Press, 1972), passim.
67. Ellen Wells to Pollyanna B. Hughes, March 8, 1978.
68. Johnson and Williams, "Some Northwest Texas Trails," p. 84.
69. Ellen Wells to Pollyanna B. Hughes, March 8, 1978;
Myrtle Murphy to Pollyanna B. Hughes, March 8, 1978.
70. Ronald M. Greenberg, ed., The National Register of Historic Places, 1976 (Washington: National Park Service, 1976).

71. Texas Historical Commission, Guide to Official Texas Historical Markers (Austin: Texas Historical Commission, 1975), pp. 16, 61.
72. Texas Almanac 1964-65, pp. 64-65, p. 79.
73. Eddie J. Guffee, The Merrell-Taylor Village Site: An Archeological Investigation of Pre-Anglo- Spanish-Mexican Occupation on Quitaque Creek in Floyd County, Texas. Plainview, Texas: Archeological Research Laboratory, Llano Estacado Museum, Wayland Baptist College, 1976, passim.

V. PREVIOUS INVESTIGATIONS

An initial archeological reconnaissance was conducted in the study area in 1972 by Dr. Jack T. Hughes as part of a total environmental impact study conducted by West Texas State University for the U.S. Army Corps of Engineers. The reconnaissance was undertaken in order to appraise the effects of the Chloride Control Project on the historical-cultural aspects of the environment of the region. The following is a brief summary of Hughes' (1972) report on the reconnaissance.

The reconnaissance included work not only at Truscott and Bateman, but also in areas to be affected at Crowell, Y Ranch, Lowrance, and Ross (see Fig. 1). Due to the limited time and money available for the study, the large areas involved, and the difficulty of access to some of the areas, it was necessary to confine activities to a surface search of only the most accessible and promising portions of the proposed reservoirs. This work can be characterized as a limited sampling or spot check, rather than the intensive survey and test excavations necessary for a satisfactory assessment of the historical-cultural resources.

A total of 35 sites was recorded in the six reservoir areas during the reconnaissance. Included are eight sites at Truscott, one at Bateman, 11 at Crowell, six at Y Ranch, four at Lowrance, and five at Ross. Since only the Truscott and Bateman reservoir areas are involved in the present study, only the nine sites recorded in those two areas are summarized below.

Prior to the reconnaissance, no archeological sites had been recorded in either the Truscott or Bateman reservoir areas. The nine sites recorded during the reconnaissance (41KX2 - 41KX9, 41KG10) were all small to moderate in extent. Most of the sites had a low concentration of specimens; only three had a moderate or high concentration. Sheetwash and edgewash were the two

main kinds of exposure. Five sites were considered to have had light usage, three had medium use, and one may have had heavy use. All of the sites were regarded as representing the Archaic Stage. Neither PaleoIndian nor NeoIndian components were located. The collections reinforce the impression left by the sites themselves that, during most of prehistory, the reservoir areas were inhabited by a sparse population of small foraging groups who seldom camped very long or very often except at a few favored locations. These nine sites are described more fully in the sites section of this report.

The reconnaissance revealed the presence in both reservoir areas of enough prehistoric sites of sufficient archeological significance to indicate the necessity of a thorough survey of the areas. Of the nine sites recorded, more searching was recommended at six (41KX3, 41KX4, 41KX7, 41KX8, 41KX9, and 41KG10), and testing was recommended at three (41KX2, 41KX5, and 41KX6). The 1977 investigations carried out the recommendations indicated by the 1972 reconnaissance.

VI. PRESENT INVESTIGATIONS

The 1977 archeological field work began with an inspection tour on April 22-23. Field work was conducted on a continual basis from May 9 through August 20. Three subsequent trips were made into the project area during October 24-27, November 11-13, and December 16-18.

These investigations included an on-foot survey of the Bateman Pumping Station, the Bateman to Truscott pipeline, and the Truscott Reservoir area. The investigations also included testing and controlled collecting of sites in the Truscott Reservoir. Field headquarters for the project were in Truscott, Texas.

The archeological field work was directed by Dr. Jack T. Hughes, Professor of Anthropology at WTSU and Director of the Archeological Research Laboratory. The field work was supervised by Gerald Meeks Etchieson, Project Archeologist, and Claire Maxwell, Field Assistant. The field crew averaged about six members at any one time. A total of 12 different persons worked as paid members of the crew. Eight persons worked as volunteer members at different times during the field season and on subsequent trips into the project area. A total of 89 days was spent in the project area and involved a total of 507 person-days of work (472 paid, 35 volunteer).

The survey was performed in standard fashion, without employing any special procedures. The survey methods and techniques are described in detail below for the project in general and for each of the construction areas. A few areas outside the project area were investigated as time permitted. The methods employed for controlled collecting and test excavating are also described below.

Before and during the field work, a library search was made for any published information on the archeology and history of the region. Archeological literature on the King

and Knox counties area is very limited. A search for unpublished information on the region was also made, especially in the files of the Texas Archeological Research Laboratory (TARL) at The University of Texas in Austin.

All sites recorded during this work, with the exception of the paleontological sites, were assigned both TARL and Panhandle-Plains Historical Museum/West Texas State University (P-PHM/WTSU) numbers. Paleontological sites were assigned only P-PHM/WTSU numbers. The TARL numbers were used in cataloging the collections, and are employed throughout this report. In the P-PHM/WTSU system, serially numbered archeological sites are prefixed with the letter "A," historical sites with "H," and paleontological sites with "P." Table 1 is an index of TARL numbers, P-PHM/WTSU numbers, and site locations in relation to construction areas.

As each site was investigated, a site record form, including a sketch map of the site, was completed. The site locations were plotted on the U.S. Geological Survey topographic quadrangle maps entitled Big Four Ranch, J Y Ranch, Maverick Flat, Ox Yoke Creek, and Truscott North. Photographs were taken of most of the sites. Notes in journal form were kept by each crew member for each site studied. Data were also recorded on record forms for squares, levels, and features at all sites tested. Photographs were taken of all excavated features.

No sites were found at the Bateman Pumping Station. No additional mitigation measures are recommended for the sites recorded and investigated along the pipeline right-of-way and in the Truscott Reservoir area. If any development is ever planned for the high ground surrounding the reservoir, however, the work should not begin until the land has been searched for archeological remains.

Table 1. Index of site numbers, locations, and dates.

<u>TARL No.</u>	<u>PPHM- WTSU No.</u>	<u>LOCATION</u>	<u>DATE RECORDED</u>
41KX2	A897	reservoir	8/23/72
41KX3	A898	reservoir	8/23/72
41KX4	A899	reservoir	8/23/72
41KX5	A1000	reservoir	8/23/72
41KX6	A1001	reservoir	8/24/72
41KX7	A1002	reservoir	8/24/72
41KX8	A1003	reservoir	8/24/72
41KX9	A1004	reservoir	8/24/72
41KX21	A1643	outside	10/25/77
41KX26	A1592	outside	6/13/77
41KX32	A1545	outside	4/23/77
41KX33	A1546	reservoir	4/23/77
41KX34	A1551	reservoir	5/27/77
41KX35	A1552	reservoir	5/27/77
41KX36	A1554	reservoir	6/2/77
41KX37	A1553	reservoir	5/27/77
41KX39	A1594	reservoir	6/18/77
41KX40	A1595	reservoir	6/18/77
41KX41	A1596	reservoir	6/21/77
41KX42	A1597	reservoir	6/21/77
41KX43	A1598	reservoir	6/22/77
41KX44	A1599	reservoir	6/18/77
41KX45	A1600	reservoir	6/30/77
41KX46	A1601	reservoir	6/18/77
41KX47	A1602	reservoir	6/18/77
41KX48	A1603	reservoir	7/5/77
41KX49	A1604	reservoir	7/5/77
41KX50	A1605	reservoir	7/5/77
41KX51	A1606	reservoir	7/5/77
41KX52	A1607	reservoir	7/5/77
41KX53	A1608	reservoir	7/5/77

Table 1 - continued.

<u>TARL No.</u>	<u>PPHM- WTSU No.</u>	<u>LOCATION</u>	<u>DATE RECORDED</u>
41KX54	A1609	reservoir	7/6/77
41KX55	A1610	reservoir	7/6/77
41KX56	A1611	reservoir	7/6/77
41KX57	A1612	reservoir	7/6/77
41KX58	A1613	reservoir	7/6/77
41KX59	A1614	reservoir	7/6/77
41KX60	A1615	pipeline	7/23/77
41KX61	A1616	pipeline	7/27/77
41KX62	A1617	pipeline	7/27/77
41KX63	A1618	reservoir	6/17/77
41KX64	A1619	reservoir	6/16/77
41KX65	A1620	reservoir	6/17/77
41KX66	H40	reservoir	7/29/77
41KX67	H41	reservoir	7/29/77
41KX68	A1621	reservoir	8/2/77
41KX69	A1622	reservoir	8/2/77
41KX70	A1623	reservoir	8/2/77
41KX71	A1624	reservoir	8/2/77
41KX72	A1625	reservoir	8/4/77
41KX73	A1626	reservoir	8/4/77
41KX74	A1627	reservoir	7/9/77
41KX75	A1628	reservoir	8/13/77
41KX76	A1629	reservoir	7/30/77
41KX77	A1630	outside	10/24/77
41KX78	A1631	outside	10/25/77
41KX79	A1632	outside	10/26/77
41KX80	A1633	outside	10/27/77
41KX81	A1634	outside	10/24/77
41KX82	A1635	reservoir	12/18/77
41KX83	H42	outside	10/26/77

Table 1 - continued.

<u>TARL No.</u>	<u>PPHM- WTSU No.</u>	<u>LOCATION</u>	<u>DATE RECORDED</u>
41KG10	A1020	outside	9/10/72
41KG11	A1636	pipeline	5/18/77
41KG12	A1637	outside	5/17/77
41KG13	A1638	pipeline	5/26/77
41KG14	A1639	pipeline	7/27/77
41KG15	A1640	pipeline	7/27/77
41KG16	A1641	pipeline	7/28/77
41KG17	A1642	pipeline	10/27/77
	A1544	outside	4/22/77

The survey of the Bateman Pumping Station was conducted during the inspection tour on April 22, 1977. An intensive on-foot survey was conducted of the entire area to be affected by the construction of the pumping station, the borrow areas, and the access road. These investigations covered an area of roughly 50 acres. No sites of cultural-historical significance were located.

The survey of the pipeline right-of-way was begun on May 10, 1977, and was completed, intermittently, by July 28. The entire right-of-way along the pipeline was intensively surveyed on foot. The pipeline right-of-way is about 33.8 km (22 mi.) in length and 30.5 m (100 ft.) in width. Access to the pipeline was by ranch roads on the Masterson, Ross, Lowrance, and Alexander ranches. These investigations covered an area of roughly 255 acres. Nine archeological sites were located in or near the pipeline right-of-way.

As each pipeline site was discovered, it was thoroughly searched in an effort to determine its character and extent. With one exception, each site was found to have been so radically disturbed by erosion that the very slow procedure of controlled collecting would have been no more meaningful than the much faster process of general collecting. An uncontrolled total surface collection was therefore made at each site, except 41KG14, where collecting was semi-controlled by bench location. Each of these sites is described in the "Pipeline Sites" section of this report.

The on-foot survey of the pipeline right-of-way took considerably more time to complete than it should have. This was due partly to the rugged terrain, but largely to the fact that long sections of the right-of-way were poorly marked for an on-the-ground survey. This resulted in so much time being spent in trying to locate the right-of-way that there was less time for the actual survey on any given day. It is strongly recommended that before surveys of

this type are undertaken, the entire right-of-way be marked plainly enough for the crew to follow it without any problem. Trying to "guesstimate" the location of portions of the right-of-way could cause significant sites to be overlooked in the initial survey. This could later delay portions of the construction work until impacts to the archeological resources could be adequately mitigated.

The survey of the Truscott Reservoir included the areas of the dam, the conservation pool, bluff slopes above the pool, and finally bluff rims above the proposed reservoir. Each of these areas was intensively surveyed on foot. These investigations covered an area of approximately 5,500 acres.

The bluff rims above the reservoir should not be directly affected in most places by construction activities or by the reservoir itself. The bluff rims were surveyed in order to locate sites which might be disturbed as a result of increased activity in the area.

Each site recorded during the 1972 reconnaissance was revisited and thoroughly examined. Study of these sites was based on the earlier recommendations and on the present conditions. As each new site was recorded it was thoroughly searched in an effort to determine its character and extent. Investigation procedures at each site were determined by the conditions at the site, especially the degree of erosional disturbance.

At most of the sites where erosional disturbance seemed to be extensive, a general, non-controlled method of total surface collection was employed. At a few of these sites, where practical, a semi-controlled method of collecting by area was used. These sites are described in the "Truscott Reservoir, General Collection Sites" section of this report.

At several sites, even with a high degree of erosional disturbance, portions of the site were left generally intact, although no testable deposits were found. These sites were

investigated by controlled collecting. Two methods of controlled collecting were employed during the course of the work, often with both being used at the same site. One method was to bag all specimens by 1 m grid squares, labeling the bag with the square number. The second method was to locate each artifact or group of artifacts with an alidade, giving each a number which was plotted on a base map of the site. The second method proved to be the most effective in terms of time and manpower required to complete the job. Artifactual material was so sparse at most sites that it did not warrant the time required to grid the site. These sites are described in the "Truscott Reservoir, Controlled Collection Sites" section of this report.

The remainder of the sites in the reservoir area contained testable deposits and/or features worthy of testing. Surface collections at these sites were made by one of the controlled methods described above. Grid squares and features were excavated by troweling and shovel-shaving. All except sterile soil was passed through 1/4-inch hardware cloth. Excavation techniques are described more precisely in the description of each site tested. Soil samples were collected from each distinguishable stratum in each level and square. The soil samples were submitted for pollen and grain-size analyses in hopes of illuminating the botanical and sedimentological conditions under which the soils were formed. Chemical analysis of the samples showed a very low organic content, indicating that pollen analysis would not be worthwhile. The results of the grain-size analysis are presented in Appendix I, and in the descriptions of the sites where the samples were obtained. The tested sites are discussed in the "Truscott Reservoir, Tested Sites" section of this report.

Only one site was completely excavated. This was one of two historic sites located in the reservoir. Both are discussed in the "Truscott Reservoir, Excavated and Historic Sites" section of this report. The only charcoal found during the fieldwork is from the excavated site. Samples were collected for comparison with tree-ring cores taken from several

large junipers near the site. The results of this study are presented in Appendix II and in the description of the site.

Several sites outside the project area were visited in order to obtain comparative data. Sample collections were made at each site. These sites are discussed in the "Sites Outside the Project Area" section of this report.

Burned rock was collected from all sites where it occurred, for possible thermoluminescence (TL) dating. Extensive reading and correspondence on TL dating, however, indicate that TL dating of burned rock, although theoretically possible, is not yet practicable.

Field records include journals, site records, level records, square records, feature records, photographic records, photographs, and maps. These field records are on file at the WTSU Archeological Research Laboratory. The Panhandle-Plains Historical Museum is the repository for the archeological and paleontological collections.

Specimens regarded as isolated finds are cataloged as "Isolated" and are given neither TARL nor P-PHM/WTSU site numbers. Collections were cleaned, labeled, and cataloged under the supervision of Roberta D. Speer, Laboratory Supervisor, at the WTSU Archeological Research Laboratory, where they were analyzed by the writers.

VII. LITHIC MATERIALS

Since the archeological specimens collected in the project area are composed almost exclusively of lithic materials, it has seemed advisable to describe these materials in a special section of this report. Most of the materials evidently came from local outcrops of the Pleistocene Seymour gravels, which afford a convenient and bountiful supply of a wide variety of pebbles and cobbles for chipped, battered, and ground stone tools, boiling stones, and hearth stones. Samples of these gravels were collected for analysis, and the results of this analysis are presented in Appendix III.

In addition to the Seymour gravels, the prehistoric Indians in the area also made use of sandstones and dolomites from the local Permian formations for ground stone tools, hearth stones, and possibly building materials, although no evidence of structures was found.

In addition to the local gravels and rocks, several kinds of exotic materials were also used by the local Indians for chipped stone tools.

The main types of lithic materials found in the area, from both local and exotic sources, are described below in alphabetical order, with comments on their sources and uses.

ALIBATES AGATE

This well-known material occurs as nodules and lenses in the Alibates Dolomite Lentil of the Quartermaster Formation of uppermost Permian age. It crops out on both sides of the Canadian River northeast of Amarillo, and fragments occur in the river gravels downstream from the outcrops. It is an agatized dolomite (Gould 1907) formed by secondary silicification and replacement of the dolomite (Asquith 1975; Bowers 1975). It is streaked or mottled with a variety of colors, usually maroon,

milky and maroon, or milky and tan, sometimes chocolate, blue, or red. It was popular over a wide area for all kinds of chipped stone artifacts from PaleoIndian times onward, and especially during NeoIndian times, when villages specializing in mining, manufacturing, and trading the material developed around the outcrops on the Canadian River. In the project area, Alibates agate is an exotic lithic type, and very few tools made of it were found.

EDWARDS FLINT

This material occurs as nodules in the limestones of the Edwards Formation of lower Cretaceous age. The formation crops out extensively from the southern part of the Eastern Caprock Escarpment southeastward into the Edwards Plateau of central Texas. Although most of this grayish to brownish material would be classified as a chert, the Indians usually selected a quality that can be regarded as a true flint. In central Texas it was used virtually to the exclusion of other materials for all kinds of chipped stone tools. In the project area it is the preferred material for projectile points, but was not commonly used for other classes of tools. It seems to be absent from the local gravels, and is considered an exotic lithic type. Its nearest known source is in gravels along the Clear Fork of the Brazos River, about 100 km (60 miles) to the south of the Truscott area.

MILKY QUARTZ

This material occurs in the local Seymour gravels. It probably derived from silicified conglomerates in the Dockum Group of upper Triassic age. These conglomerates crop out along the southern part of the Eastern Caprock Escarpment to the west of the project area. The milky quartz is a non-granular metaquartzite that resembles quartz. It occurs as

small rounded pebbles, usually bluish white and occasionally streaked with a few thin, reddish-brown veins. It tends to fracture irregularly. It is not a common tool material in northwestern Texas, but chipped pebbles of milky quartz are relatively common in the project area.

OBSIDIAN

Obsidian is a dark volcanic glass that crops out at several places in the Rocky Mountains, one of the closest sources near Los Alamos in New Mexico. Flakes and tools of obsidian occur at many sites across the Texas Panhandle, and occasionally in the Rolling Plains, but almost always in small quantities and late contexts. Only two items of obsidian were recovered during the present study.

POTTER CHERT

Large angular pebbles and cobbles of this "chert" commonly occur in the basal Potter gravels of the Ogallala Formation of Pliocene age which caps the Llano Estacado to the west of the project area. The material is a dense gray-to-brown siliceous siltstone that may have originated in the Jurassic Morrison Formation in the Rockies far to the west. It is a common element in the local Seymour gravels, which appear to consist largely of materials derived from erosion and redeposition of the Potter and Dockum gravels outcropping along the Eastern Caprock Escarpment to the west. Petrographic analysis reveals that it is composed almost entirely of highly angular grains of quartz of various sizes, with little or no matrix, and apparently cemented with silica. It was frequently used by prehistoric Indians of all stages for hammers, choppers, and smaller chipped stone tools, and sometimes for hearth stones and boiling stones. In the project area it was commonly used for all classes of stone tools except ground stone tools, which are rarely or never made of Potter chert.

PURPLE QUARTZITE

This is a fairly common material in the local Seymour gravels. The purple quartzite is probably derived from the Potter gravels to the west, like most of the other quartzites in the Seymour gravels. It is not a common element in the Potter gravels to the northwest of the project area. In the Seymour gravels it occurs as well-rounded large pebbles or small cobbles. It is a glassy, sugary-textured, purplish-colored material with a good conchoidal fracture. In the project area the material was favored for hammers, choppers, and various other chipped stone tools.

SANDSTONE

Sandstone is interbedded with shale and gypsum in the Permian redbeds that are exposed in the walls of the canyons in the project area. Prehistoric Indians often used sandstone for hearth stones and grinding slabs, occasionally for manos, and sometimes for building material. In the project area, ground stone tools of sandstone were limited to one boatstone, one grinding slab fragment, and four mano fragments.

SILICIFIED WOOD

Silicified wood occurs as small to large water-worn fragments in the Seymour gravels. Most of the silicified wood in the Seymour gravels probably came from the Potter gravels; its ultimate source is unknown. It is mostly dark and grainy but sometimes agatized. This material is not ideal for chipping because the woody structure tends to cause irregular fractures. Nonetheless it sometimes was used for hammers, choppers, and smaller chipped stone items in all prehistoric Indian stages. Most classes of chipped stone tools from the project area contain a few items of silicified wood.

TECOVAS JASPER

This material occurs as large lenses in outcrops of the Tecovas Formation of upper Triassic age in the Palo Duro Canyon area in the Eastern Caprock Escarpment of the Llano Estacado, approximately 160 km (100 miles) to the northwest of the survey area. It also occurs in gravels along the Prairie Dog Town Fork of the Red River and its tributaries, well to the east of the Escarpment. Much of the material is an opaque but lustrous and colorful cryptocrystalline quartz, mottled red-yellow-brown, and properly called "jasper." It is often speckled with tiny quartz-filled vugs. Sometimes it is combined with microcrystalline quartzitic material that otherwise resembles the jasper, and fractures in like manner. Wherever it was available, Tecovas jasper was a popular material for chipped stone tools in all prehistoric Indian stages. In the project area, tool-quality Tecovas jasper is an exotic lithic type and very few tools made of this material were collected.

UNIDENTIFIED QUARTZITE

This material commonly occurs in the Seymour gravels as pebbles and cobbles that are generally smaller and rounder than those of Potter chert. Most of the unidentified quartzite in the Seymour gravels probably came from the Potter gravels, although some may have come from the Dockum gravels. The material is quite variable, ranging from an igneous (pegmatitic) quartz through a metamorphic (gneissic or schistose) meta-quartzite into a sedimentary (silicified sandstone) ortho-quartzite. It was often used for hearth stones and boiling stones, and sometimes for manos, hammers, choppers, and smaller chipped stone items by Indians of all prehistoric stages. In the project area, it was commonly used for manos, as well as chipped stone tools.

UNIDENTIFIED STONE

Probably most of this material is from the Seymour gravels, which contain outwash material from a wide geographical area of great geological diversity. It consists of a wide variety of igneous, sedimentary, and metamorphic, cryptocrystalline, microcrystalline, and macrocrystalline pebbles that mostly are small and colorful. In the project area, tools of unidentified stone are present in higher numbers than usual. Whether this is due to the relative scarcity of colorful and/or high quality lithic material, or to the relative abundance of the unidentified stone, or to some other factor is not known.

VIII. THE SITES

Few sites had been recorded in the project area prior to the present work. During a brief reconnaissance, Hughes (1972) recorded nine archeological sites, eight in the proposed Truscott Reservoir and one outside the project area, near the Bateman Pumping Station. During the survey and testing work described in this report, an additional 53 sites were recorded for the project area. This brings the total number of sites in the project area to 61 (56 archeological, 2 historical, and 3 paleontological). In addition to the sites within the project area, 15 other sites (11 archeological, 1 historical, and 3 paleontological) which are located outside the project area were visited, including the one archeological site recorded by Hughes near the Bateman Pumping Station. The total number of sites recorded, both inside and outside the project area, is 76 (67 archeological, 3 historical, and 6 paleontological).

Of the nine archeological sites recorded during the 1972 reconnaissance (41KX2-41KX9, 41KG10), three were recommended for testing and the remaining six were recommended for further searching. These sites were revisited and further work was conducted at each. These sites are described along with the rest of the sites in this report. A list of the collections made during the 1972 reconnaissance is also given for each of these sites.

SITE TABULATION

Table 2 presents descriptions and interpretations of the 67 archeological and three historical sites in tabular form. The six paleontological sites are not included in this table, but are described later in this report. The table is more or less self explanatory. It attempts to indicate for each site something of the natural aspects

observed (geological location, site elevation, source of water, direction to water, distance from water, height above water, vegetational cover, ground situation, kind of erosional disturbance, degree of erosional disturbance); the cultural aspects observed (kind of modern disturbance, degree of modern disturbance, extent, concentration, quantity of burned rock, distribution of burned rock, composition of burned rock, burned rock clusters); the cultural aspects inferred (site function, usage, stage); and aspects of mitigation (relation to construction, investigations). The tabulation of site attributes is somewhat arbitrary and subjective, but it can be used to learn a great deal about the sites, individually or collectively, either by inspection or through the use of a computer.

All sites shown on Table 2 can be assigned to one of seven geological locations. These locations are Pleistocene rim, Permian bench-bluff, Permian bench-edge, Permian bench-foot, Permian terrace, Quaternary terrace, and Divide. Figure 8 shows the relationships of these locations to each other and to the Bluff Creek valley. Although this locational analysis was developed for the sites along Bluff Creek, the same system is applicable to the sites along the pipeline right-of-way and to those outside the project area.

The location termed "Pleistocene rim" is at the top of the bluffs along the sides of the valley. These bluffs are capped with Plio-Pleistocene alluvium. Sites in this location are situated on this alluvium except in places where it has been removed by erosion. "Permian bench-bluff" is at the foot of the bluffs on flat to gently sloping Permian benches. "Permian bench-edge" is on the benches, but at the edge of the bench rather than at the foot of the bluff. In the few cases where sites cover the bench from the bluff to the edge, they are classed as being located on the Permian bench-bluff. In these cases the bench is fairly narrow and the sites are rather small. "Permian bench-foot" is on the slopes at the

Table 2. Tabular descriptions and interpretations of sites.

	Pipeline	Rearvoir
Geological location		
Platocene rim (20)	X X	X
Permian bench - bluff (16)	X X	X
Permian bench - edge (8)	X X	X
Permian bench - foot (5)	X	X
Permian "terrace" (8)	X	X
Quaternary terrace (10)	X X	X
Divide (3)	X X	X
Site elevations		
1400-1424.9 (4)		X
1425-1449.9 (2)		X
1450-1474.9 (10)	X	X
1475-1499.9 (19)	X	X
1500-1524.9 (14)	X	X
1525-1549.9 (5)	X	X
1550-1574.9 (6)	X	X
1575-1599.9 (4)	X	X
1600-1624.9 (4)	X X	X
1625-1649.9 (0)	X X	X
1650-1674.9 (2)	X X	X
1675-1699.9 (2)	X X	X
Over 1700 (1)		X
Water		
Bird Creek (2)	X	X
Bitter Creek (4)	X X X X	X
Bluff Creek (22)	X	X
China Creek (1)	X X	X
Honey Creek (2)	X X	X
Heedmore Hill Creek (3)	X	X
North Prong Creek (11)	X	X
North Wichita (1)	X	X
Pease (1)	X	X
Red Hollow Wash (14)	X X	X
Salt Fork of the Brazos (3)	X	X
South Wichita (2)	X	X
Spring (1)	X	X
Unknown (3)	X	X
Direction to water		
North (9)	X	X
Northeast (10)	X	X
East (17)	X	X
Southeast (7)	X	X
South (13)	X	X
Southwest (3)	X	X
West (3)	X	X
Northwest (5)	X	X
Unknown (3)	X	X
Distance of sites from water		
0-100 m (19)	X	X
101-200 m (11)	X	X
201-300 m (9)	X	X
301-400 m (11)	X	X
Over 400 m (17)	X	X
Unknown (3)	X	X
Height of sites above water		
0-5 m (22)	X	X
5-10 m (17)	X	X
10-15 m (11)	X	X
15-20 m (4)	X	X
20-25 m (9)	X	X
25-30 m (1)	X	X
Greater than 30 (3)	X	X
Unknown (3)	X	X
Vegetation cover		
Grass		
Sparse (31)	X	X
Moderate (20)	X	X
Heavy (19)	X	X
Juniper		
Sparse (18)	X	X
Moderate (42)	X	X
Heavy (10)	X	X
Mesquite		
Sparse (63)	X	X
Moderate (6)	X	X
Heavy (0)	X	X
Situated on		
Mainly Permian badrock (38)	X X X X	X
Permian badrock & Quat. alluv. (12)	X X	X
Mainly Quat. alluv. (20)	X X	X
Kind of erosional disturbance		
Mainly sheetwash (48)	X X X X X X X X	X
Sheetwash and gully (5)	X	X
Edgewash mainly (4)	X	X
Edgewash or sheetwash (7)	X	X
Road-cut mainly (2)	X	X
Sheetwash, edgewash, gully (1)	X	X
Cultivation (3)	X	X
Degree of erosional disturbances		
Slight (11)	X	X
Moderate (15)	X	X
Extensive (44)	X	X

Outside

2

[illegible]

foot of the bench. At sites in this location, very little material, if any, was found on the bench. "Permian terrace" is on the sheetwashed and gullied bedrock between the benches along the edges of the valley. "Quaternary terrace" is on alluvial deposits along the banks of the larger stream channels. "Divide" is the upland area between major drainages.

The Pleistocene rim location has 20 sites (28.6%); Permian bench-bluff 16 sites (22.9%); Permian bench-edge 8 sites (11.4%); Permian bench-foot 5 sites (7.1%); Permian terrace 8 sites (11.4%); Quaternary terrace 10 sites (14.3%); and Divide 3 sites (4.3%).

Sites in the project area occur at elevations ranging from 1400 ft. to above 1700 ft. Fifty-seven percent of the sites occur between elevations of 1450 ft. and 1525 ft. Nine percent occur below 1450 ft. and 34 percent occur above 1525 ft.

Twelve water sources have been recognized for the sites in this study. Those relevant for pipeline sites are Bird Creek, Bitter Creek, Bluff Creek, Honey Creek, and the South Wichita River; for reservoir sites they are Bluff Creek, Needmore Hill Creek, North Prong Creek, and Red Hollow Wash; and for sites outside the project area, the water sources are Bird Creek, North Wichita River, Pease River, Salt Fork of the Brazos River, South Wichita River, and springs. These are the closest known water sources to these sites today.

With the exception of some of the springs, all sources contain natural salt pollution (some more than others), making the water most unpalatable. Only one freshwater spring was located during the course of the field work, near Site 41KX21. Undoubtedly in the past more freshwater springs were located in areas near these sites than are known today.

Sites are also tabulated in regard to direction to the nearest known water source. Approximately 25 percent of the

- A. Pleistocene rim
- B. Permian bench-bluff
- C. Permian bench-edge
- D. Permian bench-foot
- E. Permian terrace
- F. Quaternary terrace
- G. Divide

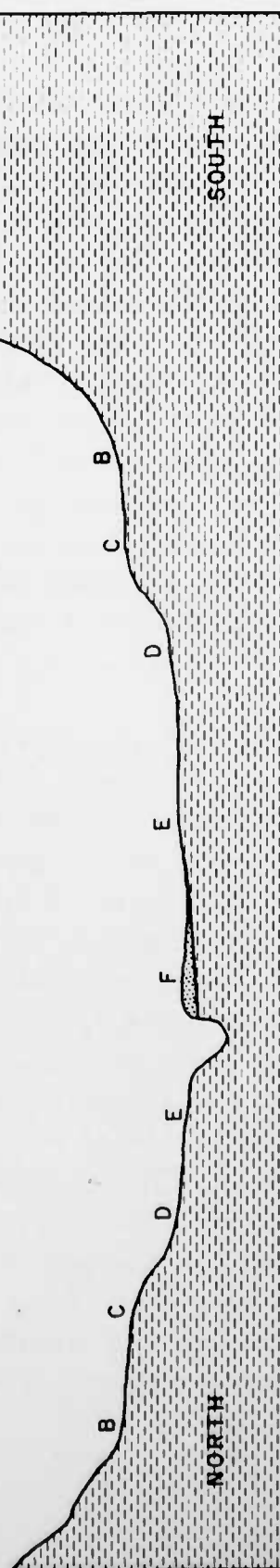


Figure 8. Schematic cross-section of Bluff Creek valley, showing geological locations of sites.

water sources are east of sites, 18.8 percent are south of sites, and the remaining 56.2 percent are scattered among the other tabulated directions.

Also tabulated are distances to water, both horizontal and vertical. Twenty-six percent of all sites are within 100 m of the water source; 24.64 percent are over 400 m from the water source; 15.94 percent occur between both 101-200 m and 301-400 m in distance; 13.04 percent are 201-300 m in distance; and no water source is known for 4.35 percent of the sites (Table 3). The fact that percentages of sites nearest water (0-200 m) and of sites most remote from water (over 300 m) are almost equal might lead one to infer that water was indeed closer to some sites at the time of occupation than it is today, probably in the form of springs. With minor exceptions, the vertical distances indicate that sites are more commonly found near water level, becoming less frequent as the height above water increases (Table 4).

The three dominant types of vegetational cover on the sites are grass, juniper, and mesquite. Grass is sparse on 44.93 percent of the sites; moderate on 28.99 percent; and heavy on 26.09 percent. Juniper is sparse at 24.64 percent of the sites; moderate at 60.87 percent; and heavy at 14.49 percent. Mesquite is either sparse or absent on 91.30 percent of the sites, and only 8.70 percent have a moderate cover. Mesquite is seldom abundant on the prehistoric sites even though there are dense thickets in various parts of the project area.

All sites can be classed as situated on one of three kinds of ground: Permian bedrock (55.07%), both Permian bedrock and Quaternary alluvium (17.39%), and mainly Quaternary alluvium (27.54%).

The main kinds of exposure at the sites are sheetwashing (68.12%); sheetwashing and gullying (7.25%); sheetwashing and edgewashing (10.14%); edgewashing (5.80%); sheetwashing,

Table 3. Distances of sites from water.

<u>Distance</u>	<u>No./Sites</u>	<u>Percent</u>
0-100 m	18	26.09
101-200 m	11	15.94
201-300 m	9	13.04
301-400 m	11	15.94
Over 400 m	17	24.64
Unknown	3	4.35
Total	69	100.00

Table 4. Heights of sites above water.

<u>Height</u>	<u>No./Sites</u>	<u>Percent</u>
0-5 m	21	30.43
5-10 m	17	24.64
10-15 m	11	15.94
15-20 m	4	5.80
20-25 m	9	13.04
25-30 m	1	1.45
over 30 m	3	4.35
Unknown	3	4.35
Total	69	100.00

edgewashing and gullying (1.45%); and modern disturbance (7.25%). The degree of erosional disturbance at the sites is high, with only 14.49 percent having received only slight disturbance.

Forty-seven sites seem not to have been subjected to any significant amount of modern disturbance. Of the 23 sites which have been disturbed, 14 are in the reservoir area and nine are outside the project area. Disturbance is the result of roads, a stock pond, brush grubbing, cultivation, and potting, or a combination of these. All of the sites disturbed by cultivation are outside the project area. Of the 23 sites subjected to modern disturbance, it has been slight at 47.83 percent, moderate at 21.74 percent, and extensive at 30.43 percent.

The size of the sites has been subjectively tabulated as limited, moderate, or broad, with the majority being of limited size. Also subjectively tabulated is the concentration of artifactual materials. The concentration is tabulated as low, moderate, or high. Some of the sites with a low concentration produced more artifacts than some with a moderate concentration. This seeming discrepancy is explained by the fact that concentration is a measure of how many artifacts are scattered over how large an area.

Burned rock is considered an artifact in that it was modified by some past human activity. It was expected to occur at almost every site. It occurs at 55 sites, where it is abundant at 12.73 percent, moderate at 40.00 percent, and sparse at 47.27 percent. Burned rock occurs primarily scattered at 78.57 percent of the sites, concentrated at 7.14 percent, and both scattered and concentrated at the remaining 14.29 percent. The most abundant lithic material of burned rock is Potter chert, which is the dominant material at 28 (50.00%) of the sites. Quartzite is the second most abundant

material and is the dominant material at 10 (17.86%) of the sites. Eleven sites (19.64%) contain almost equal quantities of Potter chert and quartzite and together they constitute the dominant material at those sites. Overall, sandstone is a minor kind of burned rock (1.41%), but it is the dominant material at seven (12.50%) of the sites.

Relatively intact concentrations of burned rock occur at 12 sites. At nine of these sites the concentrations are composed of sandstone slabs, suggesting hearths. These sites include 41KX60 along the pipeline right-of-way; 41KX6, 41KX33, 41KX45, 41KX57, and 41KX68 in the reservoir area; and 41KX21, 41KX77, and 41KX81 outside the project area. At two sites (41KX5 and 41KX78) the burned rock clusters are mainly Potter chert, and at one site (41KX4) the cluster is primarily quartzite. At these sites the clusters of burned rock suggest boiling pebble dumps rather than hearths. The scattering of burned Potter chert and quartzite at the majority of the sites may be the result of erosional disturbance of one or more boiling pebble dumps (Etchieson et al 1977:31).

With regard to function (Table 5) the sites have been classed as brief camps (44), specialized processing stations (7), workshops (4), or a combination of these (12). Three of the sites shown on the table are historic. One is a dugout, one is a corral, and the other is a cemetery.

Intensity of usage of the sites was subjectively tabulated from impressions gained while in the field. The results are that 72.46 percent of the sites fall into a light use category; 14.49 percent into moderate use; 10.14 percent into heavy use; and no estimate was made for 2.90 percent of the sites. The latter sites are outside the project area.

In the laboratory, the total number of tools from each site was determined. Three groups of tool numbers were set up to correspond with the usage scheme employed in the field. Sites which contained 0-50 tools were considered to have had

Table 5. Functions and stages of sites.

Pipeline Sites		
41KG11	Workshop	Unknown prehistoric
41KG13	Camp	Unknown prehistoric
41KG14	Camp/Specialized	Late Archaic
41KG15	Specialized	Unknown Archaic
41KG16	Workshop	Unknown prehistoric
41KG17	Workshop	Unknown prehistoric
41KX60	Camp	Unknown Archaic
41KX61	Camp	Unknown Archaic
41KX62	Camp	Unknown Archaic
Reservoir Sites		
General-Collected		
41KX7	Camp	Terminal Archaic
41KX8	Camp/Workshop	Unknown prehistoric
41KX9	Camp	Unknown Archaic?
41KX36	Camp	Unknown prehistoric
41KX39	Camp	NeoIndian/Unknown Archaic
41KX40	Camp	Unknown Archaic
41KX41	Camp/Workshop	NeoIndian/Unknown Archaic
41KX42	Camp/Workshop	Late, Unknown Archaic
41KX43	Camp	Late Archaic
41KX44	Camp	Unknown Archaic
41KX45	Camp	Unknown prehistoric?
41KX46	Camp	Terminal Archaic
41KX47	Camp	Early or Middle, Late Archaic
41KX48	Camp/Workshop	Unknown prehistoric
41KX49	Camp/Workshop	Historic/Unknown prehistoric
41KX51	Camp	Unknown prehistoric
41KX52	Camp	Unknown prehistoric
41KX53	Camp	Unknown prehistoric
41KX54	Specialized	Middle, Late Archaic
41KX55	Camp	Unknown prehistoric
41KX56	Specialized	NeoIndian/Middle, Late, Terminal Archaic
41KX57	Camp	Terminal, Unknown Archaic?
41KX58	Camp	Unknown prehistoric
41KX59	Camp	Unknown prehistoric
41KX63	Camp	Unknown prehistoric
41KX64	Camp/Specialized?	Terminal, Unknown Archaic?
41KX65	Specialized	Late Archaic
41KX69	Camp	Unknown Archaic
41KX70	Camp	Unknown prehistoric
41KX71	Camp	Unknown prehistoric
41KX72	Camp	Unknown prehistoric
41KX73	Camp	Unknown prehistoric
41KX74	Camp	Unknown prehistoric
41KX75	Camp	Unknown prehistoric
41KX76	Camp	Unknown prehistoric
41KX82	Camp	Unknown prehistoric

Table 5 - continued

Control-Collected

41KX3	Specialized	Unknown Archaic
41KX35	Camp/Workshop	Late, Unknown Archaic
41KX37	Camp/Workshop	Terminal, Unknown Archaic
41KX50	Camp	Terminal Archaic

Tested

41KX2	Specialized	Late, Terminal, Unknown Archaic
41KX4	Specialized	Unknown Archaic?
41KX5	Specialized/ Quarrying camp	Archaic
41KX6	Camp	Late, Terminal Archaic
41KX33	Camp	Unknown prehistoric
41KX34	Camp	Terminal Archaic?
41KX68	Camp	NeoIndian/Unknown Archaic

Excavated/Historic

41KX66	Dugout	Historic
41KX67	Corral	Historic

Outside Sites

41KG10	Camp	Unknown prehistoric
41KG12	Camp	Unknown prehistoric
41KX21	Camp	NeoIndian/Unknown Archaic
41KX26	Camp	NeoIndian
41KX32	Camp/Lookout	Unknown prehistoric
41KX77	Camp	NeoIndian
41KX78	Camp/Workshop	Terminal, Unknown Archaic
41KX79	Workshop	Unknown Archaic
41KX80	Camp	Unknown prehistoric
41KX81	Camp	Unknown prehistoric
41KX83	Cemetery	Historic
A1544	Camp	Unknown Archaic

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ARCHEOLOGICAL INVESTIGATIONS IN THE TRUSCOTT RESERVOIR AREA. KI--ETC(U)
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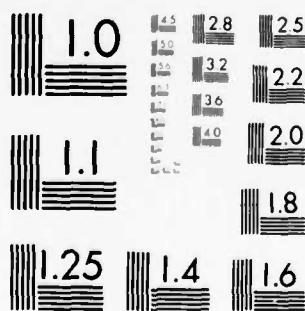
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light use, those with 50-150 tools to have had moderate use, and finally those with more than 150 tools to have had heavy use. With few exceptions the laboratory results matched the field results. Totals for cores, tested pebbles, and debitage were then added to the tool totals for the sites. The tool number groups were doubled to allow for the additional artifacts, so that sites with 0-100 artifacts were considered to have had light use, those with 100-300 artifacts to have had moderate use, and those with more than 300 artifacts to have had heavy use. Again, the laboratory results generally matched the field results.

Most of the sites recorded during the present study can be assigned to one of three of the four stages of cultural development recognized in Texas (Table 5). No sites were found which can be assigned to the PaleoIndian Stage. Thirty-six sites can be assigned to the Archaic and NeoIndian stages. Two sites are historic and one archeological site contains an historic component. Collections from Site 41KX49 contain a metal arrowpoint but no diagnostic stone items. The remaining sites did not contain any material diagnostic of any particular stage of cultural development.

The Archaic Stage in the project area has been subdivided on the basis of projectile points into five substages. These are, from early to late, the Initial Archaic, Early Archaic, Middle Archaic, Late Archaic, and Terminal Archaic. Twenty-three of the sites have Archaic components tabulated in Table 5 as "Unknown Archaic." These sites are assigned to the Archaic Stage primarily due to the presence of gouges in the collections. The temporal span of these items in the Rolling Plains is uncertain, but it is believed that they can safely be assigned to one or more of the earlier substages of the Archaic. Some authors (Wormington 1957:116-117, Hughes 1975) have reported the occurrence of gouges with projectile points of PaleoIndian types.

Table 2 also shows the locations of the 70 archeological and historical sites in relationship to construction areas. No sites were found at the Bateman Pumping Station. Five sites are located within the Bateman to Truscott pipeline right-of-way and four are near the right-of-way. In the Truscott Reservoir area 34 sites are located within the future pool, three are near the pool, nine are along the bluff rim above the pool, and three are near the dam axis. The remaining 12 sites are outside the project area and will not be affected by the construction.

Of the 58 sites investigated in the project area (56 archeological and 2 historical), artifactual material was collected in a general, uncontrolled manner at 42 of the sites, including all nine sites along the pipeline right-of-way. All of these sites had received heavy damage due to extensive erosion, and it is believed that a carefully controlled collection method was not warranted. Four sites were control collected, with each individual artifact or group of artifacts being plotted on a site map. One site was collected with controlled and semi-controlled methods. Four sites were tested and control collected. One site was tested and general collected, while two were tested and semi-control collected. No collections were made at the remaining four sites. Collections from all 11 of the archeological sites outside the project area were made by a general collecting method.

SITE CROSS-DATING

Weir (1976a, 1976b:60-66) and Patterson (1977:53-82) have attempted to divide the Central Texas Archaic into phases based on indicator projectile point types and C-14 dates. Weir (1976a, 1976b) divides the Archaic into five phases while Patterson (1977) includes a sixth phase, the Circleville Phase. Several of the point types listed for the Circleville Phase (Angostura, Golondrina, and Scottsbluff) are considered by many authors to be late PaleoIndian.

Cross-dating has been attempted for those sites recorded during this project which contain dartpoints that conform to a recognized type. Based on occurrences of comparable dartpoint types between this area and the Central Texas area, a sequence similar to that of Weir and Patterson is postulated for the Rolling Plains. The Archaic Stage has been subdivided, on this basis, into five substages corresponding with Weir's five-phase sequence. Table 6 shows the proposed correlation of Archaic sequences in Central Texas and the Rolling Plains as indicated by dartpoints. These sequences are briefly outlined below.

The Initial Archaic Substage, corresponding with the San Geronimo Phase of Weir and Patterson, is considered to be the first in Archaic cultural development after the Paleo-Indian Stage. A suggested time span is roughly from 5000 B.C. to 3000 B.C. The beginning of this substage probably overlaps with the late PaleoIndian Stage. Patterson (1977:58) lists Tortugas points as occurring in both the San Geronimo and Clear Fork phases. A Tortugas point was found on Site 41KX2, indicating possible occupation of the site during the Initial Archaic Substage.

The second substage recognized is the Early Archaic, corresponding with the Clear Fork Phase. This substage may cover a time span of about 3000 B.C. to 2000 B.C. Bulverde, Tortugas, and Wells points (Weir 1976:63; Patterson 1977:58) are thought to represent the Clear Fork Phase. One Bulverde point was found in the project area at Site 41KX47, and both Tortugas and Wells points occur at Site 41KX2, indicating occupation of these sites during the Early Archaic Substage.

A third substage, corresponding to the Round Rock Phase, is the Middle Archaic, from about 2000 B.C. to 1000 B.C. Dartpoints considered indicative of the Round Rock Phase include the Bulverde and Pedernales types (Weir 1976:64; Patterson 1977:58). The McKean type may also belong here.

Table 6. Proposed correlation of Archaic sequences in Central Texas and the Rolling Plains as indicated by dart-point types.

CENTRAL TEXAS ARCHAIC STAGE		ROLLING PLAINS ARCHAIC STAGE	
Phase	Point Types	Substage	Point Types
670 B.P. TWIN SISTERS 1690 B.P.	Darl Ensor Fairland Frio Kinney	1200 A.D. TERMINAL c. 1 A.D.	Carrizo Catan Darl Elam Ensor Fairland Frio Kent Palmillas Yarbrough
SAN MARCOS 2810 B.P.	Castroville Ensor Exp. stem pts. Frio Lange Marcos Marshall Montell Williams	LATE c. 1000 B.C.	Castroville Ellis Lange cf. Marcos Trinity Williams
ROUND ROCK 4080 B.P.	Bulverde Langtry Marshall Pedernales Val Verde	MIDDLE c. 2000 B.C.	Bulverde McKean Pedernales
CLEAR FORK 4740 B.P.	Bulverde Nolan Pandale Tortugas Travis Wells	EARLY c. 3000 B.C.	Bulverde Tortugas Wells
SAN GERONIMO	Angostura Bell "Early Barbed" Gower Martindale Tortugas Uvalde	INITIAL c. 5000 B.C.	Tortugas

A dartpoint of the Bulverde type was found at Site 41KX47; a point of cf. McKean type was found at Site 41KX64; and points of the Pedernales type were found at sites 41KX54 and 41KX56. These finds indicate occupation of these sites during the Middle Archaic Substage.

The fourth substage is the Late Archaic, corresponding with the San Marcos Phase. Suggested dates are from 1000 B.C. to 1 A.D. Dartpoint types indicating the San Marcos Phase are Castroville, Marcos, and Williams (Weir 1976:64; Patterson 1977:58). Weir also includes other expanding stem dartpoints, and for this reason the Ellis type is included here. Points of one or more of these types were found at sites 41KX2, 41KX35, 41KX43, 41KX47, 41KX54, 41KX56, 41KX65, and 41KG14, indicating occupation during the Late Archaic Substage.

The final substage, corresponding with the Twin Sisters Phase, is the Terminal Archaic, which may overlap with early NeoIndian cultures. Possible dates for this substage are from 1 A.D. until about 1200 A.D. Dartpoint types indicating the Twin Sisters Phase are Darl, Fairland, and Frio (Weir 1976:64; Patterson 1977:58). Other point types which may belong here include Carrizo, Elam, Kent, Palmillas, and Yarbrough. One or more of these types occur at sites 41KX2, 41KX34, 41KX37, 41KX47, 41KX50, 41KX56, 41KX57, 41KX64, and 41KX78, indicating occupation during the Terminal Archaic Substage.

Based on dartpoint types, sites 41KX2, 41KX35, 41KX47, 41KX54, and 41KX56 appear to be multicomponent. Each of these five sites produced types indicating occupation during two or more of the substages.

The postulated sequence for the Archaic Stage in the Rolling Plains outlined above is only the first step in trying to define the Archaic sequence in this part of the plains. This tentative sequence doubtless will be modified

as more information is produced by future work in the area. The dartpoint types listed for each substage in Table 6 may or may not be diagnostic of that substage, but this can be determined only by extensive research into the prehistory of the Archaic Stage of the Rolling Plains. The Archaic sequence postulated here should be regarded as a model for future research in the Rolling Plains rather than as an established fact.

SITE SERIATION

After some of the Archaic sites were arranged into a tentative sequence based on dartpoint types, the relative frequencies of gouges, manos, knives, and scrapers at these sites were investigated. It was believed that gouges should be diagnostic primarily of sites in the earlier part of the Archaic Stage, while the remaining three tool classes should show dominance during the later Archaic. No clear-cut patterns emerged from this analysis. There does, however, seem to be a slight tendency for gouges to decrease through time from early to late.

Additional analyses aimed at detecting temporally shifting frequencies among some of the tool classes were then conducted. The sites which produced gouges were arranged in order of decreasing number of gouges, and comparisons were made with some of the other tool classes. Choppers, crude bifaces, and scrapers (including end scrapers, side scrapers, and flake scrapers) show a slight tendency to increase in frequency as gouges decrease. This might suggest that the function of the gouges was being replaced in part by these tool classes. There may be a slight tendency for hammers to increase as gouges decrease, but this is not a clear-cut pattern. Knives seem to remain fairly constant, and chipped pebbles show no definite pattern.

The most evident contrast is between manos and flake scrapers. There is a sharp increase in the numbers of flake scrapers as manos decrease. This might be explained, however, by differences in site function. The sites with many manos and few flake scrapers may be plant food processing stations, while those with few manos and many flake scrapers may represent some other function, such as plant fiber processing.

The kinds of analyses reported above would lend themselves well to computerization. However, the situation in the project area seems to be complicated by the fact that many of the sites probably represent multiple occupations, and that few of the sites produced enough artifacts for valid statistical studies.

OTHER ANALYSES

A percentage comparison of selected tool and debitage groups for the archeological sites both inside and outside the project area is presented in Table 7. These groups include hammers/debitage, cutting/scraping tools, chopping tools, grinding implements, and other classes. The hammers/debitage group at 70.42 percent is by far the most abundant; the grinding implements at 1.91 percent are least abundant.

Table 7. Percentage comparison of selected tool and debitage groups.

Groups	Percentages
Hammers/debitage	70.42
Cutting/scraping tools	9.19
Chopping tools	4.51
Grinding implements	1.91
Other classes	13.97
Total	100.00

Percentage comparisons between reservoir and pipeline sites as to stone tool and lithic debitage materials are shown in Table 8. Lithic materials found at reservoir sites but not found along the pipeline include Alibates agate, obsidian, sandstone, and Tecovas jasper. Except for sandstone, these materials are foreign to this area. The percentages for the remaining lithic materials remain fairly consistent, within about 3 percent. Purple quartzite and unidentified stone have slightly higher percentages at pipeline sites.

Table 8. Percentage comparisons between reservoir and pipeline sites as to stone tool and lithic debitage materials.

	Reservoir	Pipeline
Alibates agate	0.34	--
Edwards flint	4.39	4.33
Milky quartz	0.67	0.48
Obsidian	0.02	--
Potter chert	48.04	45.91
Purple quartzite	11.95	15.38
Sandstone	0.05	--
Silicified wood	8.77	6.73
Tecovas jasper	0.38	--
Quartzite	16.09	15.63
Unidentified stone	9.32	11.54
Totals	100.02	100.00

In the following sections of this report, the sites investigated during the present study will be described individually. To facilitate discussion of the sites and their relationship to construction areas, the site descriptions will be organized primarily in terms of pumping station sites (0), pipeline sites (9), reservoir sites (49), and sites outside the project area (12). For descriptions of the sites within the proposed reservoir, a secondary organization will be used, based on the manner of data and artifact collection employed at the sites. The six paleontological sites are described in a separate section.

Data on locations, observations, and interpretations of the sites that are given in the individual site descriptions have been tabulated in Table 2. Numbers of specimens given in the inventories of the collections from the sites are tabulated by classes, materials, and sites in Tables 14, 16, 24, 27, and 28. Percentage data used in the analyses of the collections are tabulated in Tables 15, 19, 20, 21, 22, 25, and 26.

IX. BATEMAN PUMPING STATION SITES

The Bateman Pumping Station is located in a canyon approximately 10.5 km (6.5 mi.) east of Guthrie in King County, near the Bateman Ranch Oil Field at mile 74.9 on the South Wichita River (Fig. 9). An archeological survey was conducted of the access road from the Bateman Oil Field road to the pumping station site. The pumping station construction area and borrow areas were also intensively surveyed on foot. No archeological resources which would be impacted by the proposed construction were discovered.

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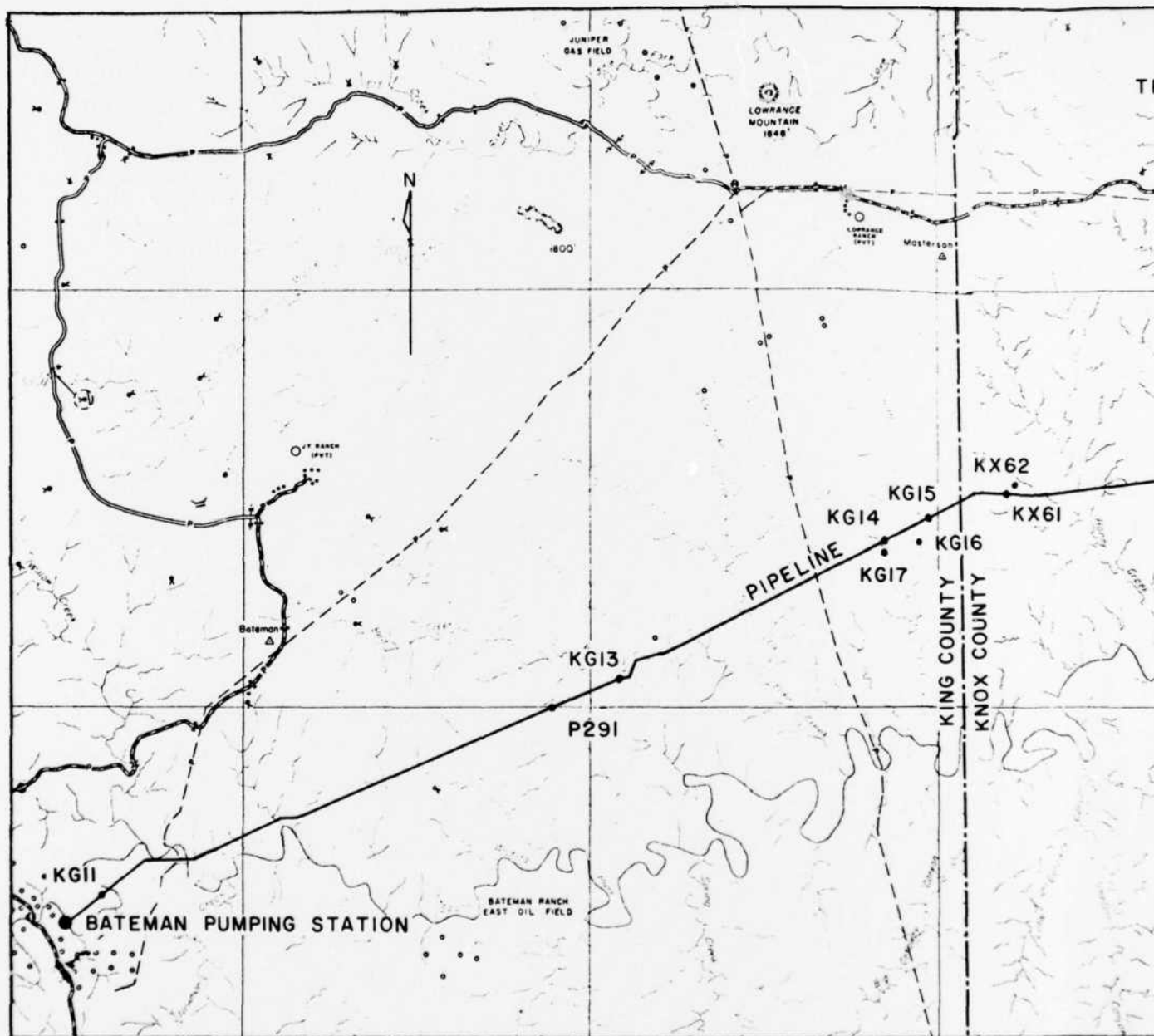
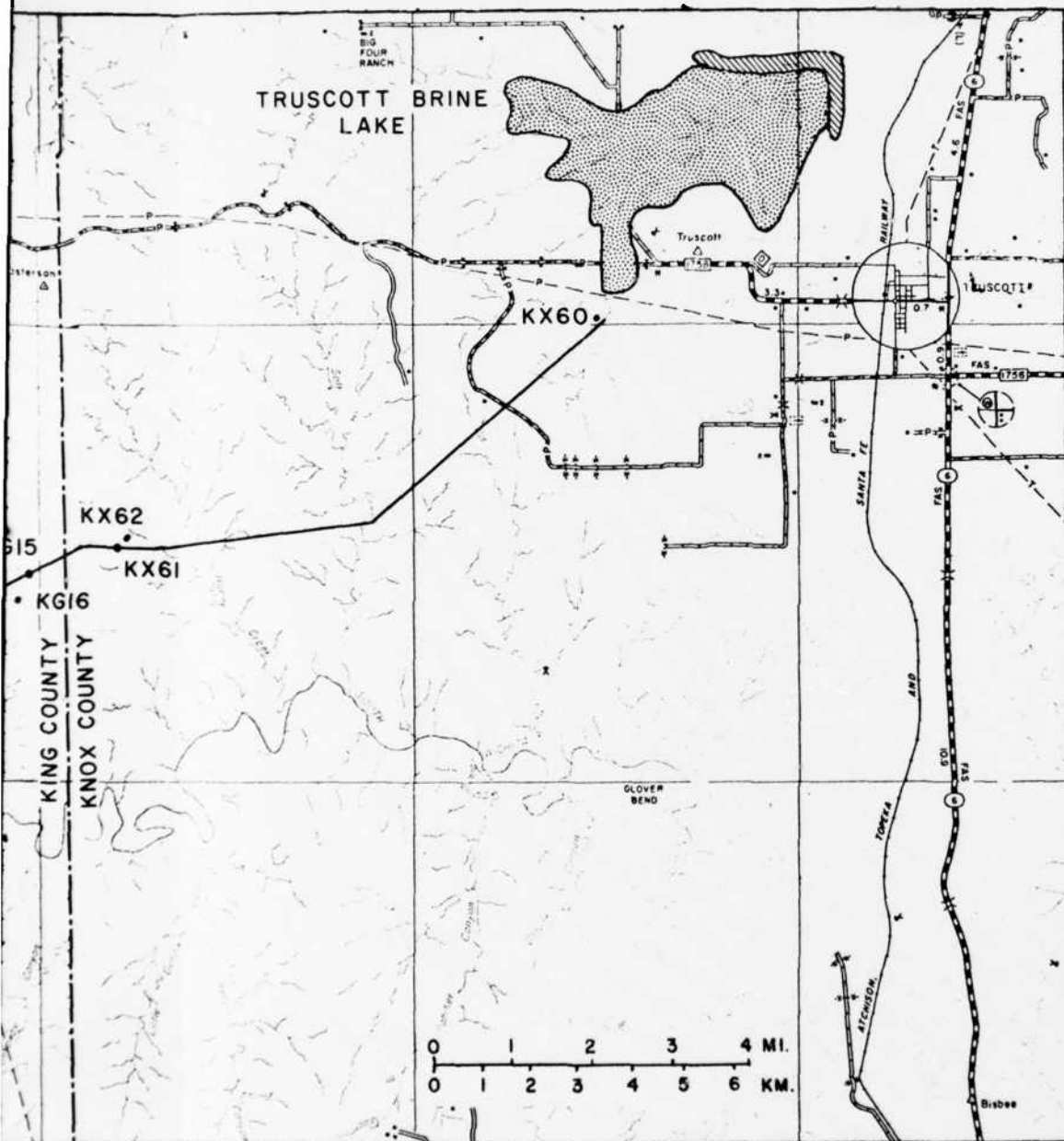


Figure 9. Map showing locations of pipeline sites.



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X. BATEMAN TO TRUSCOTT PIPELINE SITES

This pipeline will extend from the Bateman Pumping Station for about 33.8 km (21 mi.) in a northeasterly direction, emptying into Bluff Creek just south of the southern end of the proposed pool area of the Truscott Reservoir (Fig. 9). Along its route, the pipeline passes through two major environmental zones. These are the breaks of the South Wichita River and its tributaries, and the wide flat interfluvial divides. The pipeline crosses the South Wichita River and five of its major southward-draining tributaries before emptying into Bluff Creek. These tributaries, from west to east, are Bird Creek, Ox Yoke Creek, Bitter Creek, Honey Creek, and Salt Creek.

An on-foot survey of the entire length of the 100 foot-wide right-of-way for the proposed salt water pipeline was conducted. Five sites were found within the pipeline right-of-way and four were near it. Three sites are in a Pleistocene rim location. One of these is along the South Wichita River (41KG11), one is located south of Bird Creek (41KG13), and the other one is located near the eastern end of the right-of-way near Bluff Creek (41KX60). Four sites (41KG14, 41KG15, 41KG16, and 41KG17) are located along or near Bitter Creek. The final two sites (41KX61, 41KX62) are located on a divide west of Honey Creek. For site locations see Figure 9.

An analysis of lithic materials has been completed for all sites located along the pipeline (Table 9). This table shows percentage comparisons between stone tool and lithic debitage materials for pipeline sites. In the debitage category, cores and tested pebbles are included with unworked flakes. The lithic materials common in the local gravels generally are more abundant in the debitage than among the tools, as might be expected. Edwards flint is the only exotic lithic material found at any of the pipeline sites. It occurs more frequently as tools than as debitage.

Table 9. Percentage comparisons between stone tool and lithic debitage materials for pipeline sites.

	<u>Tools</u>	<u>Debitage</u>	<u>Totals</u>
Edwards flint	55.61	44.39	100.00
Milky quartz	50.00	50.00	100.00
Potter chert	33.49	66.51	100.00
Purple quartzite	21.52	78.48	100.00
Silicified wood	39.32	60.68	100.00
Quartzite	41.29	58.71	100.00
Unidentified stone	31.21	68.79	100.00

All nine sites along the pipeline right-of-way had been subjected to severe erosion. In light of this, total surface collections at each site within the right-of-way were made in a general, uncontrolled manner. One minor exception is the case at Site 41KG14, where collecting was semi-controlled by making separate collections at different elevations on the bench. Selected collections were taken at the four sites not actually within the right-of-way. The nine pipeline sites are individually described below.

Site 41KG11

Location: This site is within the pipeline right-of-way, in a Pleistocene rim location on the South Wichita River (Fig. 9).

Observations: The site consists of a light lithic scatter with a limited extent. No burned rock or features of any kind were observed. The site is situated in a heavy gravel concentration exposed by sheetwash. It has a moderate juniper cover.

Collections: 1 specimen: 1 crude biface.

Analysis: Artifactual materials at the site are too few to permit valid analyses.

Interpretations: Artifactual remains at the position of an extensive gravel outcrop would seem to indicate a lithic resource and workshop. The lithic resource was utilized by an unknown prehistoric group.

Site 41KG13

Location: This site is within the pipeline right-of-way and is located on a Pleistocene rim. It is approximately 500 m south of Bird Creek (Fig. 9).

Observations: The site is on a sheetwashed flat. Junipers are numerous and some grass is present. No tools or debitage were found at the site. A very light scatter of burned rock was found over a small area. The burned rock is mainly Potter chert. No features were located.

Collections: No collections were made at the site.

Analysis: Artifactual remains at the site are too few to permit valid analyses.

Interpretations: It is suggested that the site was a small camp briefly occupied by an unknown group.

Site 41KG14

Location: This site is within the pipeline right-of-way. It is situated on a Permian bench-bluff on the north side of a small southeastward draining tributary of Bitter Creek (Fig. 9).

Observations: The site is situated on three small gypsum benches in stairstep fashion at the foot of a bluff. A total general collection was made, but was semi-controlled in that collections were kept separate by bench location. Much burned rock was scattered over the site in the form of Potter chert, quartzite, and possibly some sandstone. Most of the burned rock was on the upper bench. There were no hearths or clusters of burned rock. The majority of lithic artifacts were located on the lower and upper benches. Most of the lithic materials are from the local gravels. No gravel outcrops were found at or near the site, but in all likelihood there is a gravel outcrop not far away.

Collections: 283 specimens: 1 dartpoint, Williams; 1 dartpoint, unidentifiable, fragment; 3 crude bifaces; 1 gouge, bifacial; 3 gouges, unifacial; 1 turtleback, bifacial; 6 choppers, bifacial;

2 choppers, unifacial; 1 chipped pebble, unifacial; 1 spoke-shave; 2 gravers; 1 scraper, side; 9 scrapers, flake; 11 retouched flakes; 3 hammers, pebble; 2 hammers, discoid; 3 hammers, edge fragments; 7 cores; 59 flakes, cortex, unworked; 52 flakes, non-cortex, unworked; 114 rocks, burned.

Analysis: Kinds and numbers of lithic materials at the site are shown in Tables 24 and 27. Edwards flint (1.78%) is the only exotic lithic material found at the site. The remaining lithic materials can be found in the local gravels. These include milky quartz (0.59%), Potter chert (49.70%), purple quartzite (16.57%), silicified wood (6.51%), quartzite (10.65%), and unidentified stone (14.20%). The unidentified stone occurs at a slightly higher frequency at pipeline sites than at reservoir sites, and roughly twice as much occurs in the form of tools.

There are not enough artifacts of any particular class to permit a statistically valid statement concerning the location of any particular class on any of the three bench locations. It can be stated, however, that the greatest number of tools and the most diverse assemblage occurs on the upper bench. The second greatest tool number and diversity occurs on the lower bench.

In view of the almost equal numbers of cortex vs. non-cortex flakes (53.15% vs. 46.85%), some primary knapping may be indicated at the site. However, the low percentage of unworked flakes compared with the total number of tools also seems to indicate that most knapping was occurring at the lithic source, or at least that finished or nearly finished tools were being brought to the site.

Interpretations: The site may be a small camp and/or a specialized processing station occupied only briefly. The cf. Williams dartpoint may indicate a Late Archaic occupation. The gouges might suggest an earlier occupation as well.

Site 41KG15

Location: This site is located on the east side of Bitter Creek and on the north side of a southwestward draining tributary. It is situated on a Permian bench-bluff within the pipeline right-of-way (Fig. 9).

Observations: The site covers an area of eroded Permian bedrock approximately 50 m north-south by 125 m east-west. Most material is situated on a bench above the tributary creek, but smaller and higher benches also reveal a few specimens. Some burned rock is scattered across the site, but no concentrations were located. Lithic specimens are scattered and include much material from the local gravels.

Collections: 220 specimens: 3 knives; 2 crude bifaces; 1 gouge, bifacial; 4 gouges, unifacial; 1 chopper, bifacial; 2 choppers, unifacial; 1 chipped pebble, unifacial; 1 graver; 3 scrapers, flake; 9 retouched flakes; 2 hammers, pebble; 3 hammers, edge fragments; 1 mano, bifacial; 18 manos, unidentified fragments; 5 cores; 41 flakes, cortex, unworked; 34 flakes, non-cortex, unworked; 87 rocks, burned; 2 shells, snail, unworked.

Analysis: Edwards flint (5.34%) is the only exotic lithic material found at the site. One of the cores is Edwards flint. The remaining lithic materials can all be found in the local gravels. These include milky quartz (0.76%), Potter chert (35.88%), purple quartzite (16.03%), silicified wood (6.11%), quartzite (22.90%), and unidentified stone (12.98%).

Gouges represent about 9.80 percent of the tool assemblage. Knives, choppers, and scrapers each make up 5.88 percent of the assemblage. Manos total 37.25 percent, an extremely high percentage, but the 18 mano fragments are all of the same material and probably represent only two or three fire-cracked manos.

Interpretations: Tool manufacturing does not seem to have been conducted at this site to any great extent. With the absence of projectile points, the presence of manos, and the high percentages of other tool classes, it may be suggested that the site was utilized briefly as a plant food gathering and/or processing station. A hunting economy does not seem to be indicated. The presence of gouges suggests an occupation during the first part of the Archaic Stage.

Site 41KG16

Location: The site is located south of Site 41KG15 on a Permian bench-edge near the pipeline right-of-way. It is located east and inside of a deeply entrenched meander of Bitter Creek (Fig. 9).

Observations: The site is small and contains a scattering of stone tools, lithic debitage, and burned rock. No concentrations were noted. Lithic materials seem to be mainly derived from the local gravels. The site has been badly disturbed by erosion.

Collections: 54 specimens: 2 choppers, bifacial; 2 scrapers, flake; 2 retouched flakes; 1 hammer, pebble; 1 hammer, edge fragment; 1 core; 15 flakes, cortex, unworked; 10 flakes, non-cortex, unworked; 20 rocks, burned.

Analysis: An interesting statistic might be noted in the burned rock. An unusually high percentage (40.00%) is purple quartzite, which is usually non-existent to about 20 percent. Excluding burned rock, 87.50 percent of the specimens are debitage or manufacturing related tools. Edwards flint (2.94%) is the only exotic lithic material found on the site. The remaining materials can be found locally and include Potter chert (50.00%), purple quartzite (17.65%), quartzite (23.53%), and unidentified stone (5.88%).

Interpretations: This site may be interpreted as a briefly utilized lithic workshop even though gravels do not occur on the site. The site was utilized by an unknown prehistoric group.

Site 4lKG17

Location: This site is located approximately 75 m of Site 4lKG14 on a Permian bench-edge. It is near the pipeline right-of-way (Fig. 9).

Observations: Burned rock and other lithic items are lightly scattered across the site. The site is badly sheetwashed, and no concentrations of specimens were found. There is a moderate grass and juniper cover.

Collections: 41 specimens: 1 chopper, bifacial; 2 chipped pebbles, bifacial; 1 graver; 3 retouched flakes; 1 hammer, pebble; 1 hammer, discoid; 3 hammers, edge fragments; 14 flakes, cortex, unworked; 8 flakes, non-cortex, unworked; 7 rocks, burned.

Analysis: The site has a high ratio of debitage and manufacturing related items to the number of tools. Edwards flint (2.94%) is the only exotic material found on the site. Other lithic materials include Potter chert (64.71%), purple quartzite (11.76%), silicified wood (8.82%), quartzite (5.88%), and unidentified stone (5.88%).

Interpretations: The site may represent a briefly occupied workshop area, utilized by an unknown prehistoric group.

Site 4lKX60

Location: The site is located near the pipeline right-of-way on a Pleistocene rim above Bluff Creek (Fig. 9).

Observations: A light scatter of lithic materials was exposed by sheetwash. Permian bedrock is exposed along the south edge of the site, nearest the right-of-way. One small sandstone hearth was found eroding from some alluvium on the northwestern side of the site. All lithic material is probably of local gravel origin with the exception of five items of Edwards flint.

Collections: 31 specimens: 1 dartpoint, unidentifiable fragment; 1 gouge, bifacial; 1 gouge, unifacial; 2 scrapers, flake;

4 retouched flakes; 1 hammer, edge fragment; 7 flakes, cortex, unworked; 12 flakes, non-cortex, unworked; 2 rocks, burned.

Analysis: Edwards flint (17.24%) is the only exotic lithic material found at the site. Materials from local sources include Potter chert (55.17%), purple quartzite (3.45%), silicified wood (6.90%), quartzite (10.34%), and unidentified stone (6.90%). Such a limited number of specimens does not lend itself well to statistical analyses.

Interpretations: A small brief camp is suggested by specimens. The dartpoint and gouges indicate an Archaic occupation.

Site 41KX61

Location: This site is situated on the divide between Honey and Bitter creeks. It is within the pipeline right-of-way (Fig. 9).

Observations: The site contains a light scatter of tools, flakes, and burned rock on the Permian bedrock. No features were located. The site is badly sheetwashed although a moderate cover of grass and juniper is present.

Collections: 17 specimens: 1 gouge, unifacial; 1 chopper, unifacial; 1 scraper, flake; 1 retouched flake; 1 hammer, edge fragment; 8 flakes, cortex, unworked; 3 rocks, burned.

Analysis: Analyses were not attempted with this limited number of specimens.

Interpretations: This site may have been a briefly occupied camp. The presence of a gouge indicates an Archaic occupation.

Site 41KX62

Location: The site is located near the pipeline and near Site 41KX61 on the divide between Honey and Bitter creeks (Fig. 9).

Observations: The site consists of a very light scatter of lithics and burned rock. No features or concentrations of any materials were found. The site has a moderate grass and juniper cover and is badly eroded.

Collections: 5 specimens: 1 gouge, unifacial; 1 scraper, side; 1 retouched flake; 1 flake, cortex, unworked; 1 rock, burned.

Analysis: The collection contains too few specimens for a statistical analysis.

Interpretations: The site may have been a briefly occupied camp. The gouge indicates an Archaic occupation.

XI. TRUSCOTT RESERVOIR SITES

During an earlier reconnaissance, Hughes (1972) recorded eight archeological sites in the proposed reservoir. During the present investigations, 41 additional archeological sites were recorded in the reservoir, for a total of 49 sites. Locations of these sites are shown in Figure 10. They are found in the following geological locations: Pleistocene rim (12), Permian bench-bluff (14), Permian bench-edge (6), Permian bench-foot (5), Permian terrace (6), and Quaternary terrace (6).

An analysis of lithic materials has been completed for all sites located in the reservoir (Table 10). This table

Table 10. Percentage comparisons between stone tool and lithic debitage materials for reservoir sites.

	Tools	Debitage	Totals
Alibates agate	78.90	21.10	100.00
Edwards flint	48.09	51.91	100.00
Milky quartz	58.82	41.18	100.00
Obsidian	100.00		100.00
Potter chert	34.30	65.70	100.00
Purple quartzite	29.89	70.11	100.00
Sandstone	100.00		100.00
Silicified wood	23.21	76.79	100.00
Tecovas	65.00	35.00	100.00
Quartzite	41.81	58.19	100.00
Unidentified stone	18.30	81.70	100.00

shows percentage comparisons between stone tool and lithic debitage materials for reservoir sites. Cores and tested pebbles are included with the debitage. Except for milky quartz, the lithic materials common in the local gravels are more frequent in the debitage than in the tools, as

might be expected. The exotic materials, with the exception of Edwards flint, are found more frequently as tools than as debitage. Data on lithic materials for reservoir sites (Table 10) are compared with similar data for pipeline sites (Table 9) in Table 8.

The sites located in the reservoir will be discussed below in order of the kind of data collection methods employed. Thirty-seven sites were general-collected or had no collections made; four were control-collected; seven were tested; and one was excavated.

GENERAL-COLLECTED SITES

The sites which were general-collected (33) or had no collections made (4) were all badly eroded sites which seemed to retain little or no integrity. One of the sites where no collections were made is a rock fence (41KX67) which is described with the excavated and historic sites. Site 41KX7, 41KX8, and 41KX9 had been previously recorded (Hughes 1972). Photographs of sites typical of the various geological locations are provided.

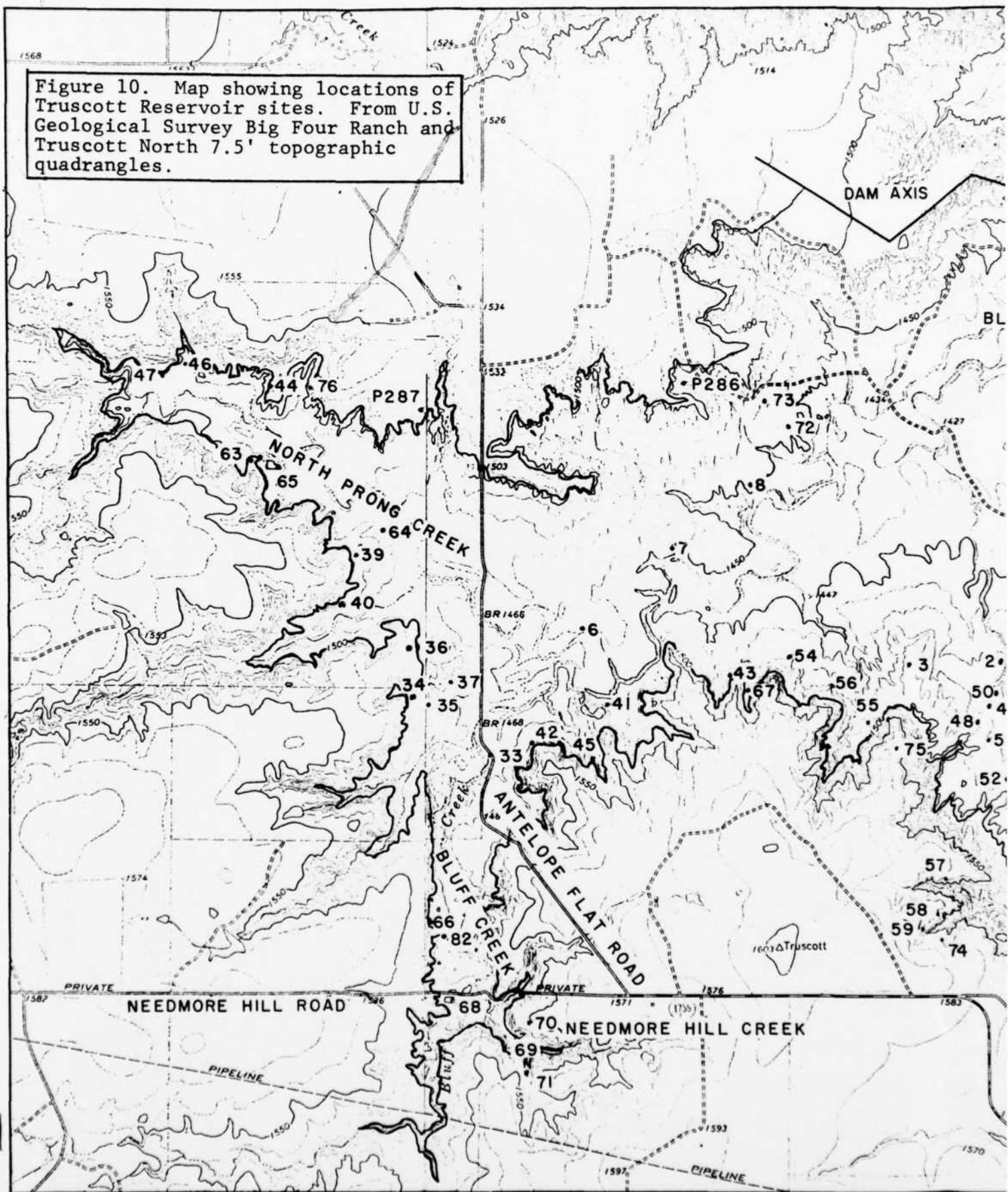
Site 41KX7

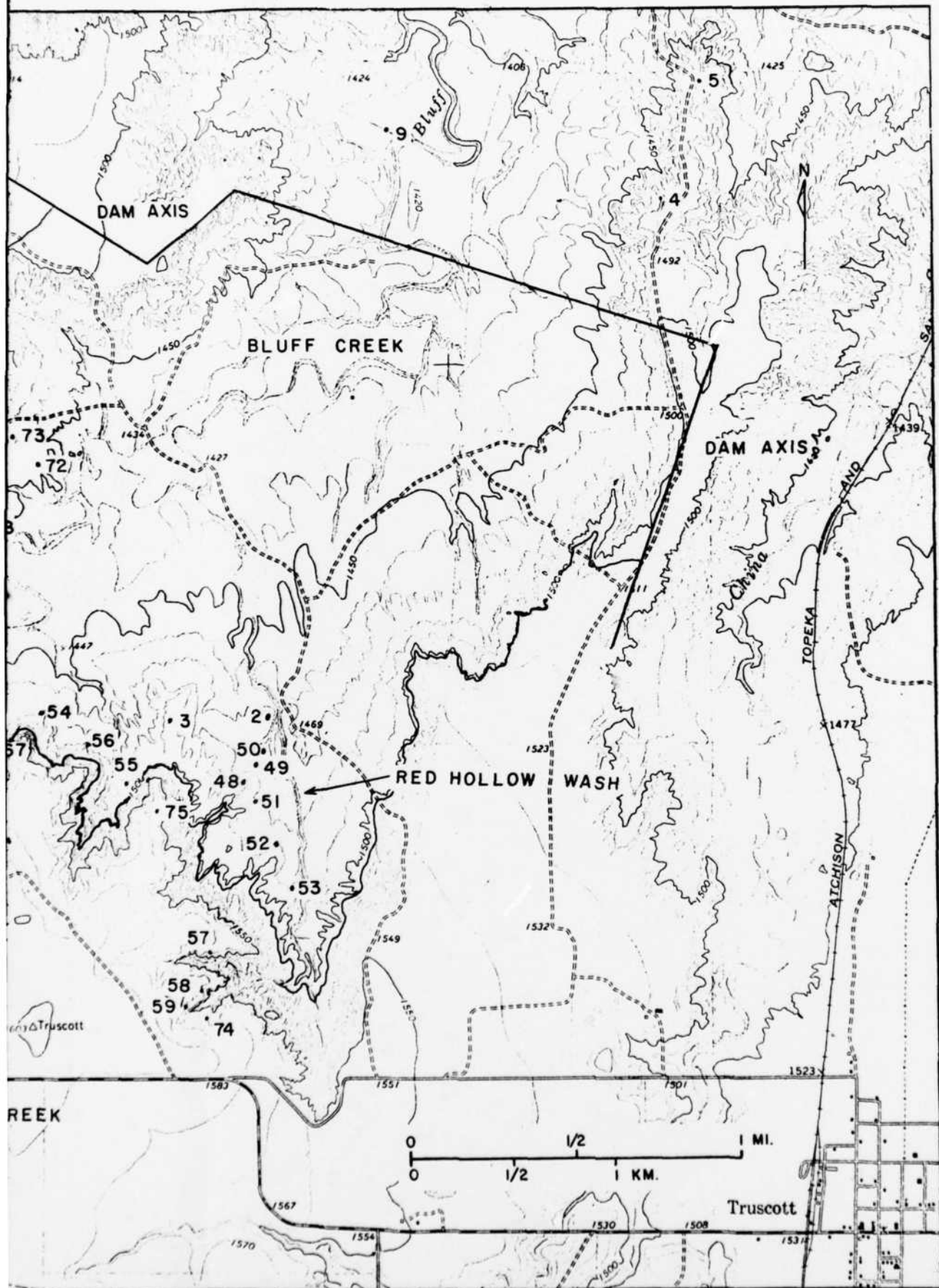
Location: This site is situated on the north and outside of a bend in Bluff Creek. It is on a sandy Quaternary terrace within the pool area (Fig. 10).

Observations: The site has been destroyed by brush grubbing and dirt moving. Small amounts of lithics are scattered around, as is some burned Potter chert and quartzite. Some possibly burned sandstone was found which may indicate the former presence of hearths. No features were located during this investigation.

Collections: 1972 - 39 specimens: 1 dartpoint, cf. Catan; 1 knife, ovate; 2 blanks, end fragments; 1 turtleback, unifacial;

Figure 10. Map showing locations of Truscott Reservoir sites. From U.S. Geological Survey Big Four Ranch and Truscott North 7.5' topographic quadrangles.





1 scraper, side, complete; 1 corner graver, single; 2 flakes with unifacially chipped edge, straight to convex; 2 flakes with unifacially chipped edge, concave; 1 milky quartz pebble, end unifacially chipped; 1 mano, unifacial, sandstone; 1 grinding slab, bi-concave wear, edge fragment; 2 cores; 7 flakes, cortex, unworked; 11 flakes, non-cortex, unworked; 4 rocks, burned; 1 shell, mussel, unworked fragment (Hughes 1972:Tables 3 & 4, Appendix V-A).

1977 - 17 specimens: 1 chopper, bifacial; 1 graver; 3 flakes, cortex, unworked; 8 flakes, non-cortex, unworked; 4 rocks, burned.

Analysis: The figures in Table 24 are for the 1977 collections only. The percentages of lithic materials presented here include the 1972 collections. Two exotic lithic materials found at the site are Edwards flint (13.04%) and Tecovas jasper (2.17%). The remaining lithic materials may be acquired locally. These include milky quartz (4.35%), Potter chert (71.74%), sandstone (4.35%), and silicified wood (4.35%).

Interpretations: The ground stone and chipped stone tools seem to indicate a small camp, probably briefly occupied. The Catan point indicates an occupation during the Terminal Archaic Substage.

Site 41KX8

Location: The site is located on the north and outside of a bend in Bluff Creek, downstream from Site 41KX7. It is on a Permian terrace and is within the reservoir pool (Fig. 10).

Observations: Lithics and burned rock are lightly scattered over a small area. No features were observed. There is a sparse grass cover and a moderate juniper cover. The site has been badly sheetwashed, with the artifactual material lying directly on the weathered bedrock.

Collections: 1972 - 32 specimens: 4 flakes with unifacially chipped edge, straight to convex; 1 silicified wood tablet,

end chipped unifacially; 1 milky quartz pebble, end chipped bifacially; 1 chopper, bifacial, complete; 1 mano, unifacial, fragment; 1 core; 18 flakes, cortex, unworked; 2 flakes, non-cortex, unworked; 3 rocks, burned (Hughes 1972:Tables 3 & 4, Appendix V-A).

1977 - 21 specimens: 1 knife; 2 crude bifaces; 1 chopper, bifacial; 2 retouched flakes; 2 hammers, edge fragments; 1 core; 5 flakes, cortex, unworked; 3 flakes, non-cortex, unworked; 4 rocks, burned.

Analysis: The figures in Table 24 are for the 1977 collections only. The percentages of lithic materials presented here include the 1972 collections. Two exotic lithic materials found on the site are Edwards flint (8.70%) and Tecovas jasper (2.17%). The remaining lithic materials, which may be found locally, include milky quartz (4.35%), Potter chert (58.70%), purple quartzite (2.17%), silicified wood (8.70%), quartzite (8.70%), and unidentified stone (6.52%).

Interpretation: Collections seem to indicate a briefly occupied camp and workshop area. The site was utilized by a group of unknown cultural affiliation.

Site 41KX9

Location: The site is located on the north and west sides of Bluff Creek. It is on the outside of a bend in the creek. It is on a sheetwashed Permian terrace near the proposed dam axis (Fig. 10).

Observations: Most of the artifacts are found on the western side of the site. No distinct concentrations of either lithics or burned rock occur. Near the eastern edge of the site, however, there is a possible cluster of burned rock scattered by erosion. Grass and juniper both occur sparsely on the site. Artifactual material occurs directly on the weathered bedrock.

Collections: 1972 - 65 specimens: 1 knife, edge fragment; 6 flakes with unifacially chipped edge, straight to convex; 1 flake with unifacially chipped edge, concave; 1 flake, battered

edge; 1 milky quartz pebble, edge chipped unifacially; 3 choppers, bifacial, complete; 1 chopper, bifacial, edge fragment; 2 cores; 27 flakes, cortex, unworked; 8 flakes, non-cortex, unworked; 14 rocks, burned (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 132 specimens: 2 crude bifaces; 3 chipped pebbles, bifacial; 2 chipped pebbles, unifacial; 1 spokeshave; 2 graters; 1 denticulate; 1 scraper, side; 1 scraper, flake; 5 retouched flakes; 1 hammer, pebble; 1 hammer, edge fragment; 1 mano, unidentified fragment; 2 cores; 2 pebbles, tested; 38 flakes, cortex, unworked; 31 flakes, non-cortex, unworked; 38 rocks, burned.

Analysis: The figures in Table 24 are for the 1977 collections only. The percentages of lithic materials given here include the 1972 collections. Two exotic lithic materials found on the site are Alibates agate (0.69%) and Edwards flint (2.76%). The remaining lithic materials are available locally and include milky quartz (1.38%), Potter chert (51.03%), purple quartzite (17.24%), silicified wood (10.34%), quartzite (11.72%), and unidentified stone (4.83%). Potter chert, purple quartzite, and silicified wood all have somewhat higher percentages than at sites in the reservoir as a whole (see Table 8). No one tool class contains an unusual number of items compared with the total for the project area.

Interpretations: The site may represent a camp occupied intermittently by small groups. The site probably belongs to the Archaic Stage, but no diagnostic cultural items were found.

Site 41KX36

Location: The site is located on a Pleistocene rim above the reservoir pool. It is on the north end of a spur between the North Prong valley and the main Bluff Creek valley (Fig. 10).

Observations: The site contains a light scattering of lithic material showing through the grass and in the sheetwashed

areas around the edges of the rim. A few sandstone slabs were found showing through the grass.

Collections: 28 specimens: 1 crude biface; 1 chipped pebble, unifacial; 1 graver; 1 denticulate; 1 scraper, end; 1 retouched flake; 8 flakes, cortex, unworked; 10 flakes, non-cortex, unworked; 4 rocks, burned.

Analysis: Edwards flint (8.33%) is the only exotic lithic material found at the site. The remaining lithic materials may be found in local sources. These include Potter chert (37.50%), purple quartzite (4.17%), quartzite (8.33%), and unidentified stone (41.67%). There are too few specimens for a detailed analysis of the individual tool classes.

Interpretations: An open camp briefly occupied by a small unknown prehistoric group is suggested.

Site 41KX39

Location: The site is situated on a Permian bench-bluff between North Prong Creek and a northeastward draining tributary to North Prong Creek (Fig. 10). The site is within the proposed reservoir pool.

Observations: The site is badly sheetwashed. Although no alluvium is located on the site, there is an alluvial deposit to the east and downslope from the site. Lithics were scattered across the sheetwashed bedrock, but not on the alluvium. Only a small amount of burned rock was found. No features were located.

Collections: 28 specimens: 1 arrowpoint, Talco; 1 knife; 1 flake knife; 1 crude biface; 1 gouge, bifacial; 1 chipped pebble, bifacial; 1 spokeshave; 4 retouched flakes; 1 hammer, pebble; 1 hammer, discoid; 1 mano, unifacial; 2 cores; 5 flakes, cortex, unworked; 5 flakes, non-cortex, unworked; 2 rocks, burned.

Analysis: The small number of specimens does not lend itself well to various statistical analyses. Edwards flint (19.23%)

and Tecovas jasper (3.85%) are the only foreign lithic materials found on the site. The remaining lithic materials can be found locally and include Potter chert (34.62%), purple quartzite (7.69%), silicified wood (3.85%), quartzite (23.08%), and unidentified stone (7.69%).

Interpretations: A small open camp briefly occupied is suggested. The gouge and arrowpoint indicate both Archaic and NeoIndian components.

Site 41KX40

Location: The site is located inside a southwest-northeast oriented canyon, tributary to North Prong Creek. The site is situated mainly on a Permian bench-bluff on the northern side of the canyon. It is within the reservoir pool (Fig. 10).

Observations: The site is badly sheetwashed. Lithics are strewn across the bedrock bench and down the slope to the south. No concentrations of lithics or burned rock were found, nor were any features discovered. At the foot of the bench is a small alluvial deposit. A small amount of lithic debris is scattered on sheetwashed bedrock along the north edge of the alluvium. No cultural material was found on or eroding from the alluvial deposit.

Collections: 67 specimens: 1 dartpoint or knife; 4 knives; 4 crude bifaces; 1 gouge, bifacial; 1 turtleback, unifacial; 1 chopper, bifacial; 1 chopper, unifacial; 1 chipped pebble, bifacial; 1 unclassified fragment, bifacial; 2 spokeshaves; 1 scraper, side; 1 scraper, flake; 3 retouched flakes; 1 hammer, edge fragment; 2 manos, bifacial; 1 mano, unifacial; 18 flakes, cortex, unworked; 14 flakes, non-cortex, unworked; 9 rocks, burned.

Analysis: Collections were made at the site in a general, yet semi-controlled manner. Collections were kept separate from the bench area, bench talus, off the bench, and the sheetwashed area down by the alluvial deposit. The collections from the

four localities appear to be fairly homogeneous, and no special work areas or processing stations within the site are suggested. Exotic lithic materials at the site are Alibates agate (1.72%) and Edwards flint (5.17%). The remaining materials are present in about the usual ratios, and include Potter chert (50.00%), purple quartzite (12.07%), silicified wood (8.62%), quartzite (12.07%), and unidentified stone (10.34%).

Interpretations: The knives and side scraper suggest some butchering and the manos suggest preparation of some wild plant foods. The site is interpreted as a small open camp temporarily occupied by an Archaic group, possibly toward the latter part of the Archaic Stage.

Site 41KX41

Location: The site is east and at the base of the easternmost of three small peaks south of Bluff Creek (Fig. 10). It is situated on a Permian bench-bluff within the proposed reservoir pool.

Observations: The site is badly sheetwashed and contains scattered lithics and burned rock. No concentrations of either lithics or burned rock were found, nor were any features detected.

Collections: 84 specimens: 1 arrowpoint, Alba; 2 crude bifaces; 1 gouge, unifacial; 1 chopper, unifacial; 1 spokeshave; 1 graver; 1 scraper, flake; 5 retouched flakes; 4 hammers, pebble; 2 hammers, discoid; 10 hammers, edge fragments; 3 manos, unidentified fragments; 1 flake, worn; 14 flakes, cortex, unworked; 9 flakes, non-cortex, unworked; 28 rocks, burned.

Analysis: A higher than usual percentage of the lithics are Potter chert (60.71%). Edwards flint (1.79%) is the only exotic lithic material found at the site. The remaining lithics are purple quartzite (12.50%), silicified wood (7.14%), quartzite (12.50%), and unidentified stone (5.36%).

Almost half (48.48%) of the specimens collected and identified as tools or tool fragments are hammers (18.18%) and hammer fragments (30.30%). Less than half (41.07%) of the specimens collected, excluding burned rock, are unworked flakes.

Interpretations: An open camp and small workshop, briefly occupied, is suggested. Collections indicate both Archaic and NeoIndian components.

Site 41KX42

Location: The site is located at the southern bluff of Bluff Creek valley on a Permian bench-bluff (Fig. 10). It is within the reservoir pool area.

Observations: The site is badly sheetwashed. Lithics and burned rock were scattered over the site, covering a small area. No features were found. Concentration and usage are considered moderate.

Collections: 155 specimens: 1 dartpoint, Trinity; 1 knife; 5 crude bifaces; 2 gouges, bifacial; 2 gouges, unifacial; 2 choppers, bifacial; 1 chipped pebble, bifacial; 4 chipped pebbles, unifacial; 1 spokeshave; 1 graver; 1 scraper, end; 1 scraper, side; 2 scrapers, flake; 14 retouched flakes; 7 hammers, pebble; 16 hammers, edge fragments; 1 mano, bifacial; 1 mano, unifacial; 5 manos, unidentified fragments; 5 cores; 1 pebble, tested; 22 flakes, cortex, unworked; 15 flakes, non-cortex, unworked; 43 rocks, burned; 1 shell, mussel, unworked fragment.

Analysis: A lower than usual percentage (60.00%) of artifacts from the site, excluding burned rock, are items related to tool manufacturing. Six percent of the specimens are manos or mano fragments. Cutting and scraping tools make up 10 percent of the inventory.

Edwards flint (5.41%) is the only exotic lithic material found at the site. The remaining materials are Potter chert (41.44%), purple quartzite (16.22%), silicified wood (13.51%), quartzite (13.51%) and unidentified stone (9.91%).

Interpretations: The artifacts suggest a camp and workshop of short duration. The Trinity dartpoint suggests an occupation during the Late Archaic Substage.

Site 41KX43

Location: The site is situated on a Permian bench-bluff (Fig. 11) on the south side of the Bluff Creek valley (Fig. 10). It is located within the reservoir pool.

Observations: The site occupies a long narrow bench. Sheetwash erosion has been severe. No concentrations of lithics or burned rock were located, and no features were found. Material was rather evenly scattered across the site. Grass was sparse but there was a moderate juniper cover.

Collections: 68 specimens: 1 dartpoint, cf. Marcos; 3 crude bifaces; 1 gouge, bifacial; 1 chopper, bifacial; 3 choppers, unifacial; 1 chipped pebble, bifacial; 1 chipped pebble, unifacial; 1 scraper, end; 3 scrapers, flake; 3 retouched flakes; 5 hammers, pebble; 2 manos, bifacial; 1 mano, unifacial; 2 cores; 21 flakes, cortex, unworked; 4 flakes, non-cortex, unworked; 14 rocks, burned; 1 bone, tooth enamel, fragment.

Analysis: Edwards flint (5.66%) is the only foreign lithic material found on the site. The remaining materials are Potter chert (47.17%), purple quartzite (9.43%), silicified wood (1.89%), quartzite (30.19%), and unidentified stone (5.66%). Purple quartzite, silicified wood, and unidentified stone occur in numbers smaller than expected, while other quartzites almost double the usual percentages.

Interpretations: An open camp occupied briefly by a small group is suggested. The Marcos dartpoint indicates an occupation during the Late Archaic Substage.



Figure 11. Looking northeast across a Permian bench-bluff site, 41KX43.

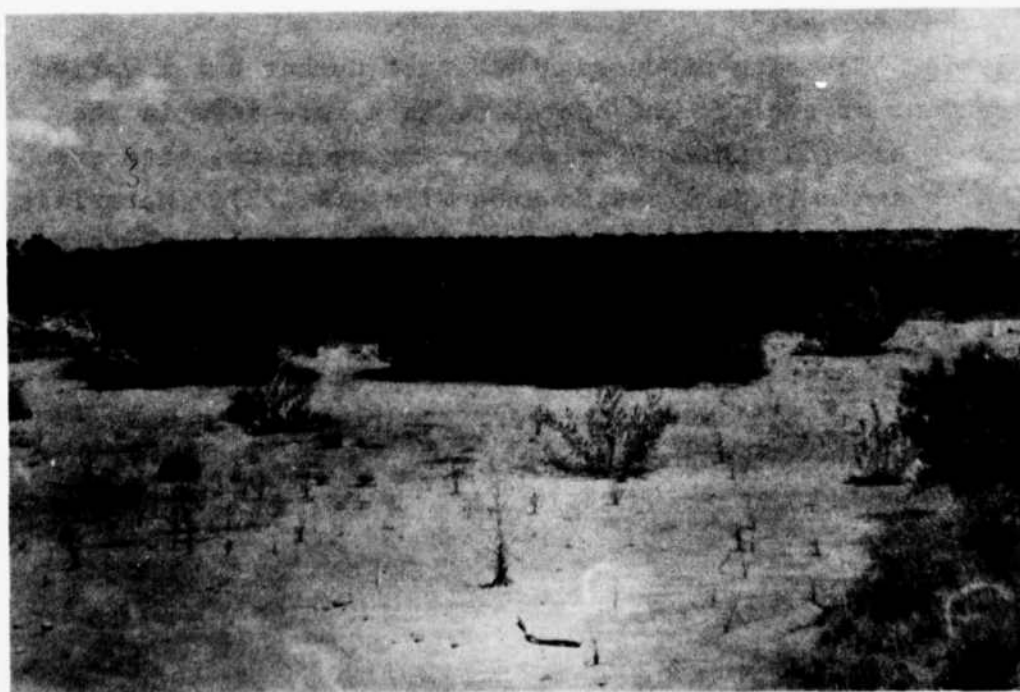


Figure 12. Looking east across a Permian bench-edge site, 41KX48.

Site 41KX44

Location: Located on the north side of North Prong Creek, the site is situated on a Permian bench-edge within the reservoir pool (Fig. 10).

Observations: The site has been largely destroyed by earth removal for a nearby stock pond levee. Bedrock was removed from around a central "island." A light scatter of lithic material was located on the top and slopes of the island, but most material was collected from the floor of the surrounding borrow area. No features or concentrations of either lithics or burned rock were found.

Collections: 151 specimens: 6 knives; 4 crude bifaces; 1 gouge, bifacial; 8 gouges, unifacial; 1 turtleback, bifacial; 2 choppers, bifacial; 1 chipped pebble, bifacial; 1 chipped pebble, unifacial; 1 spokeshave; 1 denticulate; 6 scrapers, flake; 20 retouched flakes; 1 hammer, pebble; 1 hammer, discoid; 1 mano, bifacial; 3 manos, unifacial; 3 manos, unidentified fragments; 1 boatstone, fragment; 5 cores; 25 flakes, cortex, unworked; 28 flakes, non-cortex, unworked; 31 rocks, burned.

Analysis: The site produced a moderate number but a varied assortment of tools. The boatstone is a rare item in the region. Exotic lithic materials occurring at the site are Alibates agate (0.83%) and Edwards flint (4.17%). Materials of local origin are Potter chert (50.00%), purple quartzite (15.00%), sandstone (0.83%), silicified wood (5.00%), quartzite (20.83%), and unidentified stone (3.33%).

Interpretations: The site may have been a camp or food processing station occupied intermittently. The gouges indicate an Archaic occupation.

Site 41KX45

Location: The site is located in a small side canyon draining northwestward into Bluff Creek (Fig. 10). It is within the reservoir pool.

Observations: The site is situated on a badly sheetwashed bedrock surface. Cultural remains consist of a possible weathered hearth, made of sandstone slabs placed in a circle. No other features were located.

Collections: None

Analysis: No artifacts were found with the hearth. No age or cultural affiliation can be inferred.

Interpretations: The hearth may represent an overnight camp by an unknown group.

Site 41KX46

Location: The site is located on the north side of North Prong Creek near the upper and western end of the proposed reservoir (Fig. 10). It is on a Permian bench-bluff within the future pool.

Observations: The site is a light lithic scatter covering a small area. No concentrations, features, or burned rocks were observed. The site is badly sheetwashed, and materials were found on the eroded bedrock surface.

Collections: 17 specimens: 1 dartpoint, Yarbrough; 1 flake knife; 1 crude biface; 1 gouge, unifacial; 2 scrapers, flake; 7 retouched flakes; 1 hammer, edge fragment; 1 flake, cortex, unworked; 1 flake, non-cortex, unworked; 1 bone, mandible, unworked fragment.

Analysis: This small collection does not lend itself well to statistical analysis. Classes and materials of lithic items at the site are inventoried in Table 24.

Interpretations: A briefly occupied open camp is indicated. A Terminal Archaic utilization is suggested by the Yarbrough point.

Site 41KX47

Location: The site is located on the north side of North Prong Creek near the upper and western end of the reservoir (Fig. 10). It is within the reservoir pool and is on a Permian bench-bluff.

Observations: The site is a light scatter of lithics and burned rock. No concentrations or features were found. The site is badly sheetwashed and all of the artifacts were found on the eroded bedrock.

Collections: 89 specimens: 1 dartpoint, Bulverde; 1 dartpoint, cf. Marcos; 1 dartpoint or knife; 3 knives; 2 crude bifaces; 3 gouges, bifacial; 3 gouges, unifacial; 3 choppers, bifacial; 1 chopper, unifacial; 1 unclassified fragment, unifacial; 2 spokeshaves; 2 scrapers, end; 1 scraper, side; 5 scrapers, flake; 10 retouched flakes; 2 hammers, pebble; 2 hammers, edge fragments; 3 manos, bifacial; 1 mano, unidentified fragment; 1 core; 22 flakes, cortex, unworked; 12 flakes, non-cortex, unworked; 6 rocks, burned; 1 shell, mussel, unworked fragment.

Analysis: The site contains a small but varied artifact assemblage, including the only obsidian artifact found in the project area. The exotic lithic materials at the site are Alibates agate (1.22%), Edwards flint (7.32%), and obsidian (1.22%). The materials from local sources are Potter chert (52.44%), purple quartzite (4.88%), silicified wood (3.66%), quartzite (21.95%), and unidentified stone (7.32%). Purple quartzite is much less frequent at this site than usual in the project area. Both Potter chert and quartzite occur in slightly higher frequencies than at the reservoir sites as a whole. This might be due in part to variations in the composition of the local gravel resources.

Interpretations: The site may have been a camp briefly occupied at intervals by various small groups. The Alibates end scraper suggests a NeoIndian component, although no

artifacts diagnostic of this cultural stage were found. The Bulverde and cf. Marcos dartpoints indicate occupations during the Early or Middle and Late Archaic substages.

Site 41KX48

Location: This site is located west of Red Hollow Wash (Fig. 10) on the edge of a Permian bench (Fig. 12). It is within the reservoir pool.

Observations: There is a deposit of blowsand along the western boundary of the site. Lithic material occurs sparsely near the blowsand. Lithics and burned rock are scattered to the east along the eastern edge of the bench. No features or concentrations of lithics or burned rock were located.

Collections: 81 specimens: 1 crude biface; 1 chopper, bifacial; 1 chopper, unifacial; 3 chipped pebbles, bifacial; 4 chipped pebbles, unifacial; 1 scraper, side; 1 scraper, flake; 9 retouched flakes; 4 hammers, pebble; 1 mano, unifacial; 3 cores; 1 pebble, tested; 16 flakes, cortex, unworked; 11 flakes, non-cortex, unworked; 24 rocks, burned.

Analysis: Edwards flint (5.26%) is the only exotic lithic material at the site. The local materials are milky quartz (1.75%), Potter chert (24.56%), purple quartzite (14.04%), silicified wood (21.05%), quartzite (17.54%), and unidentified stone (15.79%).

Interpretations: The site may represent a camp and workshop occupied briefly by an unknown group,

Site 41KX49

Location: The site is located at the foot of a Permian bench, approximately 180 m west of Red Hollow Wash. It is within the reservoir pool (Fig. 10).

Observations: The site is situated in a patch of bare red earth of the kind locally known as a "scald." It slopes eastward and is badly sheetwashed. The ground is mainly bare but

some grass occurs around scattered juniper clumps. Some burned rock is distributed across the site. No concentrations of lithics or burned rock were found. Nothing was found on a Permian bench above the site to the west.

Collections: 205 specimens: 1 arrowpoint, Benton Metal Point; 4 knives; 4 crude bifaces; 1 turtleback, bifacial; 1 turtleback, unifacial; 3 choppers, bifacial; 1 chopper, unifacial; 2 chipped pebbles, bifacial; 1 scraper, end; 5 scrapers, flake; 2 retouched flakes; 2 hammers, pebble; 3 hammers, edge fragments; 1 mano, unifacial; 2 cores; 1 pebble, tested; 47 flakes, cortex, unworked; 57 flakes, non-cortex, unworked; 67 rocks, burned.

Analysis: This site has a higher ratio of knapping evidence (hammers, cores, tested pebbles, and unworked flakes) than most of the sites. The remaining tool classes are primarily cutting, scraping, and chopping tools.

Table 24 reveals that Edwards flint (5.84%) is the only exotic lithic material found on the site. The other materials are common in the local gravels, and include milky quartz (2.19%), Potter chert (67.88%), purple quartzite (8.76%), silicified wood (2.92%), quartzite (5.84%), and unidentified stone (6.57%). The percentage of Potter chert is about 19 percent higher than the average for reservoir sites (Table 8).

None of the stone artifacts is diagnostic of any particular stage of cultural development. Whether or not the historic metal point is associated with any of the stone artifacts is unknown. The historic item may be intrusive onto an earlier prehistoric site.

Interpretations: An historic component is indicated by the Benton Metal Point but its association with the lithic assemblage is uncertain. A briefly occupied camp and workshop is suggested by the artifact inventory.

Site 41KX51

Location: The site is located in a Permian bench-foot position. It is west of Red Hollow Wash and within the reservoir pool (Fig. 10).

Observations: This site is in a location similar to Site 41KX49. It is badly sheetwashed, with the artifacts lying directly on weathered bedrock. Some lithic material was on top of the bench, but most was scattered around its lower slopes. No concentrations of lithics or burned rock were found.

Collections: 24 specimens: 1 gouge, unifacial; 1 chopper, bifacial; 1 chipped pebble, unifacial; 2 scrapers, flake; 1 retouched flake; 1 core; 3 flakes, cortex, unworked; 3 flakes, non-cortex, unworked; 11 rocks, burned.

Analysis: Specimens are too few for statistical analyses. Classes and materials of specimens are numbered in Tables 24 and 27.

Interpretations: A small brief camp is suggested. The gouge indicates an Archaic occupation.

Site 41KX52

Location: This site is located west of Red Hollow Wash, south of Site 41KX51. It is at the foot of a Permian bench, within the proposed reservoir (Fig. 10).

Observations: The site is badly sheetwashed and artifacts were lying directly on the scoured bedrock. The site contained only a light scattering of lithics and burned rock over a wide area. No material was found on the Permian bench. No concentrations were located.

Collections: 41 specimens: 1 chopper, unifacial; 1 chipped pebble, unifacial; 4 scrapers, flake; 2 retouched flakes; 4 flakes, cortex, unworked; 9 flakes, non-cortex, unworked; 20 rocks, burned.

Analysis: No exotic materials were found on the site. All materials are from the local gravels and include Potter chert (47.62%), purple quartzite (19.05%), silicified wood (14.29%), quartzite (14.29%), and unidentified stone (4.76%).

Interpretations: A brief camp occupied by a small unknown prehistoric group is suggested.

Site 41KX53

Location: The site is located on the west bank of Red Hollow Wash within the southern extent of the reservoir pool (Fig. 10). It is on a Permian terrace.

Observations: The site is situated on a small high spot near the wash. Very sparse amounts of lithics and burned rock were observed. No concentrations were located.

Collections: 7 specimens: 1 scraper, flake; 1 retouched flake; 5 rocks, burned.

Analysis: Collections are too limited for statistical analyses.

Interpretations: A very brief occupation by a very small unknown prehistoric group is indicated.

Site 41KX54

Location: The site is located at the foot of a Permian bench (Fig. 13). It is along the southern bluffs of the reservoir, about midway between Red Hollow Wash and the Antelope Flat Road (Fig. 10). It is within the reservoir pool.

Observations: The site is badly sheetwashed and gullied. Lithic material was abundantly scattered over a wide area. No material was located on the bench top south of the site. Lithics were scattered from the foot of the bench northward and down-slope for approximately 100 m., and east-west along the foot of the bench for 75-100 m. A low erosional remnant of bedrock marks the eastern limit of the site. The site was bare except for clumps of grass around a few junipers. No features or concentrations of lithics or burned rock were located.

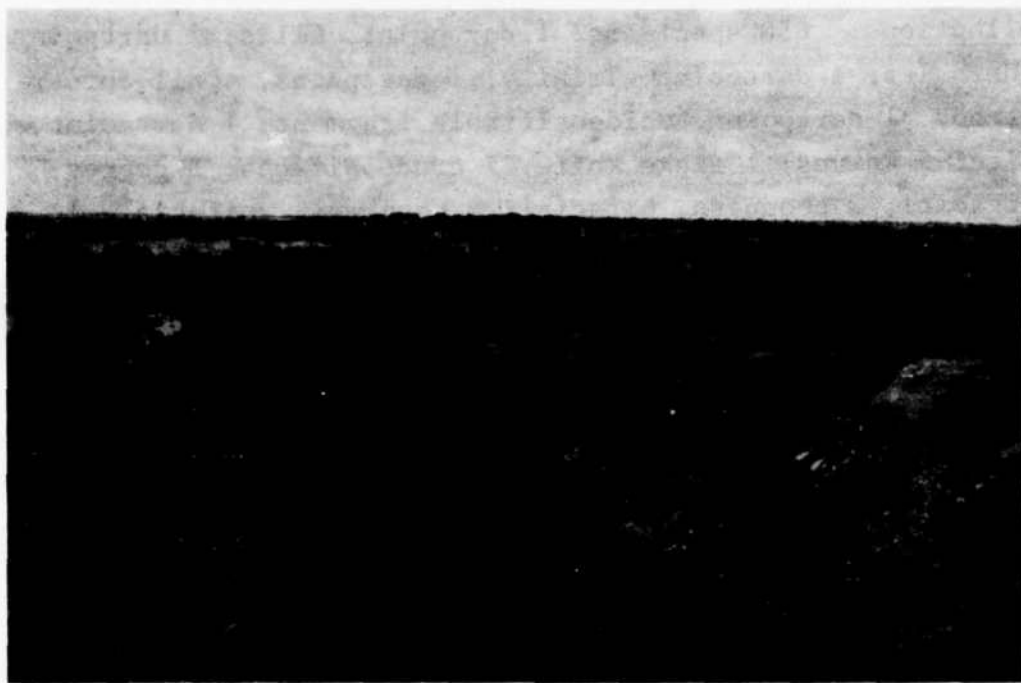


Figure 13. Looking east across a Permian bench-foot site, 41KX54.

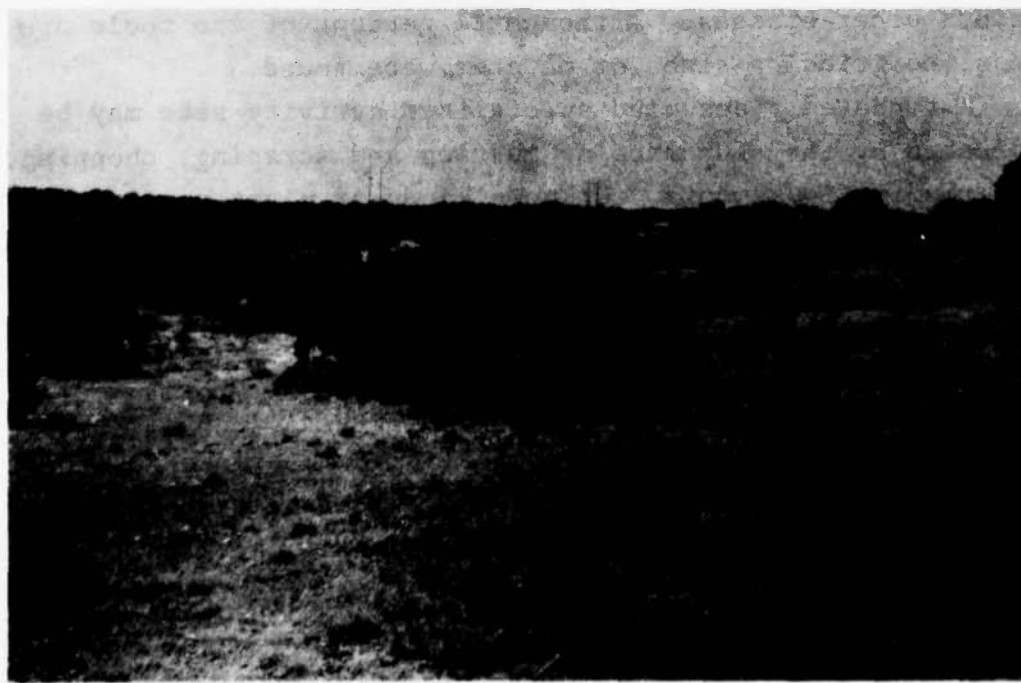


Figure 14. Looking west across a Pleistocene rim site, 41KX57.

Collections: 650 specimens: 1 dartpoint, Ellis; 2 dartpoints, Pedernales; 1 dartpoint, Trinity; 1 dartpoint, small corner-notched; 1 dartpoint, unidentifiable fragment; 1 dartpoint or knife; 5 knives; 1 flake knife; 7 crude bifaces; 3 gouges, unifacial; 2 choppers, bifacial; 4 choppers, unifacial; 1 chipped pebble, bifacial; 6 chipped pebbles, unifacial; 1 unclassified fragment, unifacial; 2 spokeshaves; 4 gravers; 1 denticulate; 2 scrapers, end; 1 scraper, unclassified; 4 scrapers, flake; 18 retouched flakes; 16 hammers, pebble; 8 hammers, discoid; 37 hammers, edge fragments; 5 manos, bifacial; 5 manos, unifacial; 16 manos, unidentified fragments; 1 stone, worn, unidentified; 5 cores; 1 pebble, tested; 258 flakes, cortex, unworked; 141 flakes, non-cortex, unworked; 83 rocks, burned; 5 bone, teeth, unidentifiable fragments.

Analysis: A high percentage (82.92%) of the artifacts from this site are debitage and manufacturing-related tools. Of the remaining tools, 6.25 percent are dartpoints; 17.71 percent are cutting or scraping tools; 13.54 percent are chopping tools; 27.08 percent are grinding implements; and 35.42 percent are various other classes. Although 27 percent of the tools are manos, no grinding slabs or metates were found.

A repeatedly occupied specialized activity site may be indicated by the abundance of cutting and scraping, chopping, and grinding implements. Unknown kinds of plant resources possibly were being processed.

Tool manufacture is suggested by the high percentage of lithic debris. Some of the hammers may reflect plant processing rather than flint knapping.

Table 24 shows that Alibates agate (0.71%) and Edwards flint (4.49%) were the only exotic lithic materials found at the site. The remaining materials are available locally. These include Potter chert (63.35%), purple quartzite (7.47%), sandstone (0.18%), silicified wood (5.16%), quartzite (12.28%), and unidentified stone (6.41%). These percentages may be compared with Table 8.

Interpretations: The site appears to have been a specialized processing station that was visited repeatedly over a long span of time. The Pedernales points indicate utilization during the Middle Archaic Substage. The Ellis and Trinity points suggest that utilization was extended into the Late Archaic Substage.

Site 41KX55

Location: The site is situated on a dissected Permian bench-bluff on the west side of a long spur which extends to the north (Fig. 10). It is located on the south side of the Bluff Creek valley within the reservoir pool.

Observations: The site has been exposed by sheetwashing and contains a light scatter of lithics and burned rock lying directly on the weathered bedrock. No features or concentrations of lithics or burned rock were found.

Collections: 81 specimens: 1 knife; 1 flake knife; 2 crude bifaces; 1 gouge, bifacial; 1 gouge, unifacial; 3 choppers, bifacial; 1 chopper, unifacial; 4 scrapers, flake; 2 retouched flakes; 4 hammers, pebble; 2 hammers, edge fragments; 1 mano, unifacial; 2 manos, unidentified fragments; 1 core; 14 flakes, cortex, unworked; 9 flakes, non-cortex, unworked; 32 rocks, burned.

Analysis: Edwards flint (4.08%) is the only exotic material found at the site. The remaining lithic materials are Potter chert (59.18%), purple quartzite (8.16%), silicified wood (4.08%), quartzite (18.37%), and unidentified stone (6.12%).

Interpretations: The site may be a small camp briefly occupied by a small group. The gouges indicate an Archaic occupation.

Site 41KX56

Location: The site is located on a Permian bench-bluff along the southern edge of the Bluff Creek valley (Fig. 10). It is approximately 500 m to the southeast of Site 41KX54. It is within the reservoir pool.

Observations: The site is badly disturbed by erosion. This site, like 41KX54, contained abundant lithic tools, lithic debris, and burned rock. The site has a heavy juniper cover and some grass around the juniper clumps. A large northward flowing wash is located to the east of the site.

Collections: 252 specimens: 1 arrowpoint, Scallorn; 1 dartpoint, Castroville; 1 dartpoint, Lange; 1 dartpoint, Palmillas; 1 dartpoint, Pedernales; 2 dartpoints, cf. Williams; 1 dartpoint, preform; 7 knives; 7 crude bifaces; 1 gouge, bifacial; 2 gouges, unifacial; 1 chopper, bifacial; 2 graters; 2 denticulates; 2 scrapers, side; 17 scrapers, flake; 6 retouched flakes; 8 hammers, pebble; 8 hammers, edge fragments; 2 manos, bifacial; 2 manos, unifacial; 3 manos, unidentified fragments; 6 cores; 1 pebble, tested; 74 flakes, cortex, unworked; 42 flakes, non-cortex, unworked; 50 rocks, burned; 1 bone, tooth enamel, fragment.

Analysis: Sixty-eight percent of the artifacts, excluding burned rock, are debitage or manufacturing-related tools. Of the remaining tools, 12.90 percent are projectile points; 46.77 percent are cutting and scraping tools; 1.61 percent are chopping tools; 11.29 percent are grinding implements; and 27.43 percent are miscellaneous additional classes. As at Site 41KX54, no grinding slabs or metates were found with the manos.

A specialized processing site may be indicated by the high percentage of cutting and scraping tools. Manos also constitute a high percentage of the tools, but not as high as the 27.08 percent from Site 41KX54.

Some tool manufacturing is suggested by the 68 percent debitage and hammers. It seems significant that 63.79 percent of unworked flakes are cortex flakes, while only 36.21 percent are without cortex.

Edwards flint is the only exotic lithic material found on the site, amounting to 4.98 percent of the chipped stone

items. The remaining lithics can be found locally in the gravels. Percentages for the locally acquired materials are Potter chert (38.31%), purple quartzite (23.38%), silicified wood (4.48%), quartzite (19.90%), and unidentified stone (8.96%). Purple quartzite is twice as frequent at this site as at the reservoir sites in general.

Interpretations: Site 41KX56 may represent a specialized processing station repeatedly occupied for brief periods of time. The Scallorn arrowpoint may indicate a minor NeoIndian component. If the dartpoints are reliable indicators, a more intensive utilization of the site during the Late Archaic Substage is suggested, with less utilization in both the Middle and Terminal substages.

Site 41KX57

Location: This site is in a Pleistocene rim location (Fig. 14) above the reservoir pool. The site overlooks a small tributary canyon draining eastward into Red Hollow Wash (Fig. 10).

Observations: The site stretches along the north rim of the canyon for about 125 m east-west. The main concentration of material is toward the eastern end. The site is exposed primarily by sheetwash and possibly to some degree by wind deflation. Several sandstone slabs eroding from a small residual patch of alluvium may represent a hearth.

Collections: 348 specimens: 1 dartpoint, Kent; 2 dartpoints or knives; 3 knives; 9 crude bifaces; 3 gouges, unifacial; 5 choppers, bifacial; 1 graver; 13 scrapers, flake; 10 retouched flakes; 5 hammers, pebble; 6 hammers, edge fragments; 1 mano, unifacial; 1 stone, worn, unidentified fragment; 2 cores; 103 flakes, cortex, unworked; 65 flakes, non-cortex, unworked; 118 rocks, burned.

Analysis: Excluding burned rock, 78.70 percent of the specimens are classed as debitage and hammers. Of the remaining tools, 2.04 percent are dartpoints; 38.78 percent are cutting and

scraping tools; 10.20 percent are chopping tools; 4.08 percent are grinding implements; 18.34 percent are crude bifaces; 20.41 percent are retouched flakes; and 6.12 percent are other classes. The percentages for crude bifaces and retouched flakes are unusually high.

Exotic lithic materials at the site include both Alibates agate (0.87%) and Edwards flint (5.22%). The remaining materials, found locally, include Potter chert (38.70%), purple quartzite (11.74%), silicified wood (14.38%), quartzite (15.65%), and unidentified stone (13.48%). Potter chert at this site is less frequent than usual at sites in the reservoir, while silicified wood and unidentified stone are more frequent.

Interpretations: The site appears to have been occupied for an extended period of time as a camp. The Kent point may indicate an occupation during the Terminal Archaic Substage. An earlier occupation also may be indicated by the gouges.

Site 41KX58

Location: The site is south of Site 41KX57 and is in a similar location, on the north rim of a small tributary canyon draining eastward into Red Hollow Wash. It is on the Pleistocene rim above the reservoir pool (Fig. 10).

Observations: Situated on the southward sloping rim, the site has been subject to extensive sheetwashing. Artifacts are located on the eroded bedrock. No concentrations of lithics or burned rock were found.

Collections: 11 specimens: 1 chopper, bifacial; 1 mano, bifacial; 6 flakes, cortex, unworked; 3 rocks, burned.

Analysis: Although there are too few items for a valid statistical analysis, it is interesting to note that purple quartzite (50.00%) and other quartzites (37.50%) outnumber Potter chert (12.50%).

Interpretations: The site may represent a brief camp by an unknown prehistoric group.

Site 41KX59

Location: This site is located west of Site 41KX58 and is near the head of the same small eastward draining tributary to Red Hollow Wash (Fig. 10). Like 41KX58, it is situated on a Pleistocene rim.

Observations: The ground surface slopes to the south and is badly sheetwashed. Low cutbanks in the alluvium are present along the western and northern edges of the site. Lithic material was scattered lightly across the site, without any concentrations.

Collections: 5 specimens: 1 gouge, unifacial; 1 core; 2 flakes, cortex, unworked; 1 rock, burned.

Analysis: The collections are too limited for statistical analysis.

Interpretations: The site may represent a very brief camp by a small group. The gouge indicates an Archaic occupation.

Site 41KX63

Location: The site is located on a Permian bench-edge along the south side of North Prong Creek (Fig. 10). It is near the reservoir pool.

Observations: The site is on a bedrock surface which has been subject to extensive sheetwashing. Cultural material is light and scattered. No features were located.

Collections: 21 specimens: 3 knives; 1 chopper, unifacial; 1 spokeshave; 1 scraper, side; 6 scrapers, flake; 1 retouched flake; 1 flake, cortex, unworked; 3 flakes, non-cortex, unworked; 4 rocks, burned.

Analysis: Of the 17 chipped items, 10 are cutting and scraping tools. Collections are too few for statistical analyses.

Interpretations: A small camp briefly occupied by some unknown prehistoric group is suggested.

Site 41KX64

Location: This site is located on a Permian bench-edge along the south side of North Prong Creek (Fig. 10). It is within the reservoir pool.

Observations: The site is extensively sheetwashed. Lithics and burned rock were scattered over the eroded bedrock with no apparent concentrations. No features were discovered.

Collections: 66 specimens: 1 dartpoint, Darl; 1 dartpoint, Elam; 1 dartpoint, cf. McKean; 1 knife; 1 gouge, bifacial; 1 turtleback, bifacial; 3 choppers, unifacial; 1 graver; 1 scraper, end; 1 scraper, side; 2 scrapers, flake; 3 re-touched flakes; 1 hammer, edge fragment; 1 mano, unidentified fragment; 3 cores; 16 flakes, cortex, unworked; 12 flakes, non-cortex, unworked; 16 rocks, burned.

Analysis: Excluding burned rock, 64 percent of the collections are debitage and hammers. Of the remaining artifacts, 16.67 percent are dartpoints; 38.89 percent are cutting and scraping tools; 16.67 percent are chopping tools; 5.56 percent are grinding implements; and 22.21 percent are other classes.

Exotic lithic materials at this site include both Alibates agate (2.00%) and Edwards flint (4.00%). The remaining materials are available locally and include Potter chert (46.00%), purple quartzite (8.00%), silicified wood (16.00%), quartzite (20.00%), and unidentified stone (4.00%).

Interpretations: A short term camp or special processing site is suggested. The Darl and Elam points suggest utilization during the Terminal Archaic Substage. The cf. McKean point may indicate a much earlier occupation as well.

Site 41KX65

Location: This site is located near Site 41KX63 and is on a Permian bench-edge. It is within the reservoir pool (Fig. 10).

Observations: Like most of the other sites, this one has also been subject to extensive sheetwashing. Worked stone and burned rock were scattered across the site. No features or concentrations were found.

Collections: 58 specimens: 1 dartpoint, Ellis; 2 crude bifaces; 5 choppers, bifacial; 5 chipped pebbles, unifacial; 5 scrapers, flake; 2 retouched flakes; 11 hammers, edge fragments; 1 core; 18 flakes, cortex, unworked; 5 flakes, non-cortex, unworked; 3 rocks, burned.

Analysis: Excluding the burned rock, 63.64 percent of the collections are debitage and hammer fragments; 1.82 percent are dartpoints; 9.09 percent are cutting and scraping tools; 18.18 percent are chopping tools; and the remaining 7.27 percent includes crude bifaces and retouched flakes. No grinding implements were found.

Edwards flint (3.64%) is the only lithic material foreign to the area. The remaining materials are milky quartz (7.27%), Potter chert (67.27%), purple quartzite (9.09%), silicified wood (3.64%), quartzite (7.27%), and unidentified stone (1.82%).

Interpretations: A briefly occupied specialized processing site, with an emphasis on choppers, is suggested. The Ellis dartpoint may indicate an occupation during the Late Archaic Substage.

Site 41KX69

Location: Located south of the Needmore Hill Road, this site is situated on a Pleistocene rim overlooking Needmore Hill Creek, a small northward flowing tributary to Bluff Creek (Fig. 10).

Observations: The site is situated on a small sheetwashed and wind deflated spur. A light scatter of lithics and burned rock was observed. No concentrations or features were located. A large flat to the west of the site contained a deep alluvial deposit.

Collections: 26 specimens: 1 gouge, bifacial; 2 choppers, bifacial; 1 chopper, unifacial; 1 scraper, side; 2 scrapers, flake; 1 hammer, edge fragment; 7 flakes, cortex, unworked; 6 flakes, non-cortex, unworked; 5 rocks, burned.

Analysis: The collections from this site are too small for valid statistical analyses. Edwards flint (33.33%) is the only exotic lithic material at the site and it is unusually abundant. Other materials include Potter chert (52.38%), purple quartzite (4.76%), and quartzite (9.52%).

Interpretations: The site appears to be a small camp briefly occupied by a small group. The gouge indicates an Archaic occupation.

Site 41KX70

Location: The site is located on the east rim of Needmore Hill Creek south of the Needmore Hill Road (Fig. 10). It is on the Pleistocene rim above the reservoir pool.

Observations: The ground surface slopes westward toward the canyon rim and is badly sheetwashed. A light scattering of lithics was observed through the thin grass cover. No features or concentrations were found.

Collections: 19 specimens: 1 chipped pebble, unifacial; 1 scraper, side; 3 scrapers, flake; 1 retouched flake; 5 flakes, cortex, unworked; 8 flakes, non-cortex, unworked.

Analysis: Although the collections are too small for valid statistical analysis, it may be worth noting that Edwards flint (31.58%) constitutes a large percentage of the lithics. The remaining materials are Potter chert (31.58%), silicified wood (10.53%), quartzite (10.53%), and unidentified stone (15.24%).

Interpretations: A camp briefly occupied by a small prehistoric group is suggested.

Site 41KX71

Location: This site is located south of Site 41KX69 on a Pleistocene rim (Fig. 10).

Observations: The site is exposed by sheetwashing and edge-wash along a cutbank. A light scatter of lithics and burned rock occurs over a small area. No cultural material was observed eroding from the cutbank. The only artifacts seen were a few unworked flakes and a percussion-flaked cobble of Potter chert. Materials were mainly from the local gravels, but some flakes of Edwards flint and one of possible Tecovas jasper were noted.

Collections: None.

Analysis: None.

Interpretations: The site appears to be a camp briefly occupied by an unknown prehistoric group.

Site 41KX72

Location: The site is located on a Permian bench-edge north of Bluff Creek near an access road that climbs up the north valley slope (Fig. 10). It is within the reservoir pool.

Observations: The bench is fairly flat but badly sheetwashed. A light scattering of lithics and burned rock was observed. No features or concentrations were found.

Collections: 28 specimens: 1 chopper, unifacial; 1 chipped pebble, bifacial; 1 scraper, flake; 1 hammer, edge fragment; 5 flakes, cortex, unworked; 6 flakes, non-cortex, unworked; 13 rocks, burned.

Analysis: The collections are inadequate for statistical analyses. Table 24 itemizes the classes and materials of tools and debitage. No exotic materials were found.

Interpretations: A camp briefly occupied by a small unknown prehistoric group may be inferred.

Site 41KX73

Location: This site is located northwest of Site 41KX72 on a Permian terrace near the northern valley slope. It is within the reservoir pool (Fig. 10).

Observations: The site is sheetwashed, but has a moderate juniper and heavy grass cover. A light lithic scatter, covering a small area, was observed through the grass. No burned rock, features, or concentrations were detected.

Collections: 63 specimens: 1 scraper, flake; 1 retouched flake; 1 mano, unifacial; 2 flakes, cortex, unworked; 58 flakes, non-cortex, unworked.

Analysis: Of these specimens, 92.06 percent are very small unworked flakes. A disproportionately high percentage of unidentified stone (84.13%) for the site is due to the fact that most of these flakes are burned beyond recognition.

Interpretations: This site may have been a very brief camp occupied by an unknown prehistoric group.

Site 41KX74

Location: This site is located on the south rim of a small eastward draining valley which is tributary to Red Hollow Wash (Fig. 10). It is on a Pleistocene rim above the proposed reservoir.

Observations: The ground surface slopes north toward the edge of the canyon. The site is badly sheetwashed. No chipped items were found - only a light scattering of fire-cracked rock. No features were located.

Collections: 9 specimens: 9 rocks, burned.

Analysis: None.

Interpretations: A small camp briefly occupied by an unknown group is inferred.

Site 41KX75

Location: The site is in a Pleistocene rim location. It is near the north end of a long narrow spur jutting northward from the large interfluvial divide south of the Bluff Creek valley. This spur is approximately 0.25 mi. west of Red Hollow Wash (Fig. 10).

Observations: The site has been subjected to a slight amount of sheetwash. Lithic artifacts were observed through the grass scattered over a confined area. All of the artifacts were found on the eastern side of the spur. No burned rock was located.

Collections: 19 specimens: 1 chopper, unifacial; 1 pebble, tested; 2 flakes, cortex, unworked; 15 flakes, non-cortex, unworked.

Analysis: Collections contain too few specimens for statistical analyses. Numbers, classes, and materials of tools and debitage are included in Table 24.

Interpretations: The site may be a small camp or lookout briefly occupied by an unknown prehistoric group.

Site 41KX76

Location: This site is located on a Pleistocene rim on the north slope of North Prong Creek. It is within the proposed reservoir pool (Fig. 10).

Observations: The site is badly eroded and has a cutbank along the southern edge. It has also been disturbed to an unknown degree by a stock pond. Most of the lithics and burned rock were collected from around the eroded edges of the site. No material was found eroding from the cutbank. No clusters or concentrations of either lithics or burned rock were located.

Collections: 67 specimens: 1 gouge, unifacial; 1 chopper, bifacial; 1 scraper, end; 2 retouched flakes; 1 mano, bifacial; 22 flakes, cortex, unworked; 23 flakes, non-cortex, unworked; 16 rocks, burned.

Analysis: Excluding burned rock, 88.24 percent of the collections are unworked flakes; 3.92 percent are scraping tools; 1.96 percent are chopping tools; 1.96 percent are grinding implements; and 3.92 percent are other classes.

Edwards flint (7.84%) is the only exotic lithic material found at the site. Other materials are Potter chert (29.41%), purple quartzite (19.61%), sandstone (1.96%), silicified wood (11.76%), quartzite (23.53%), and unidentified stone (5.88%).

Interpretations: A briefly occupied camp is suggested. The gouge indicates an Archaic occupation.

Site 41KX82

Location: The site is located west of Bluff Creek, approximately midway between the Needmore Hill and Antelope Flat roads. It is within the future reservoir pool (Fig. 10).

Observations: A light scatter of burned rock and an occasional unworked flake was observed over a small area. The site is badly eroded. An alluvial remnant is located west of the site.

Collections: None.

Analysis: None.

Interpretations: A small prehistoric group of unknown affiliation may have camped here briefly.

Isolated Finds

Location: Isolated finds were made at various places throughout the reservoir area.

Observations: The isolated finds are stray items encountered during the survey which were not associated with any known site. They are listed under "Isolated" in Tables 14, 23, 24, and 27.

Collections: 70 specimens: 1 dartpoint, cf. Marcos; 2 dartpoints, unidentifiable fragments; 1 knife; 3 crude bifaces; 5 gouges, unifacial; 1 chopper, bifacial; 1 chopper, unifacial;

2 chipped pebbles, unifacial; 2 spokeshaves; 2 scrapers, end;
 3 scrapers, flake; 10 retouched flakes; 2 hammers, pebble;
 1 hammer, discoid; 3 hammers, edge fragments; 1 mano, bifacial;
 1 core; 1 pebble, tested; 16 flakes, cortex, unworked; 4 flakes,
 non-cortex, unworked; 3 rocks, burned; 3 bones, unworked fragments.

CONTROL-COLLECTED SITES

Four sites (41KX3, 41KX35, 41KX37, and 41KX50) were investigated by means of controlled collecting, without any testing or excavation. Site 41KX3 had been sampled in an uncontrolled manner during the earlier reconnaissance of the reservoir (Hughes 1972). During the present work, part of the site was general collected in a semi-controlled manner, as explained in the description of the site. All four of the control-collected sites are located within the proposed reservoir pool.

The Corps of Engineers provided large detailed topographic maps for the Truscott Reservoir. These maps have a scale of 1 inch equals 200 feet and a contour interval of 2 feet. Maps adapted from these Corps maps accompany the descriptions of most of the control-collected and tested sites that follow. Table 11 gives the coordinates of these topographic maps. The coordinates are based on the Texas state plane coordinate system north-central zone.

Table 11. Coordinates for topographic maps of control-collected and tested sites.

<u>Site</u>	<u>East-west</u>	<u>North-south</u>
41KX2	1,287,600-1,288,400	775,400-776,200
41KX3	1,286,400-1,287,200	775,600-776,400
41KX6	1,280,900-1,281,700	775,800-776,600
41KX33	1,279,000-1,279,800	773,700-774,500
41KX34	1,277,800-1,278,600	774,700-775,500
41KX35	1,287,200-1,279,000	774,500-775,300
41KX37	1,278,600-1,279,400	775,000-775,800
41KX50	1,287,700-1,288,500	774,600-775,400
41KX66	1,277,900-1,278,700	770,800-771,600
41KX68	1,278,200-1,279,000	769,600-770,400

Site 4lKX3

Location: This site is located west of Red Hollow Wash on a high narrow bench extending to the northeast (Fig. 10). It is within the reservoir pool.

Observations: The site occupies the top of the Permian bench from the extreme northern end toward the southwest. It covers a distance of about 75 m (NE-SW) along the top of the bench. At the southwestern edge of the site the bench top is about 18 m in width. To the northeast the bench top tapers to a narrow point (Fig. 15). This portion of the bench top is very flat, varying no more than 10-15 cm in elevation. The bench top has a sparse grass cover and juniper clumps occur along the eroded edges.

Lithic artifacts and burned rock are scattered across the top of the bench. Much material was also found eroding down the bench slopes and across the flats to the east, north, and west.

Investigations: Two methods of collecting were employed at the site. The bench top was collected in a controlled manner and the slopes and flats were collected in a semi-controlled manner.

The bench top artifacts were collected by recording the location of each individual item or group of items. These items were flagged, numbered serially, surveyed with an alidade, and plotted on a base map of the site. Elevations were recorded for many of the specimens.

The artifacts from the slopes and flats were collected in a general manner, but semi-controlled by area. Three separate areas of collection were designated. These collection areas are the eastern side of the bench, the northern end, and the western side (Fig. 15). A controlled system was not employed because of the severe erosion to which these areas had been subjected.

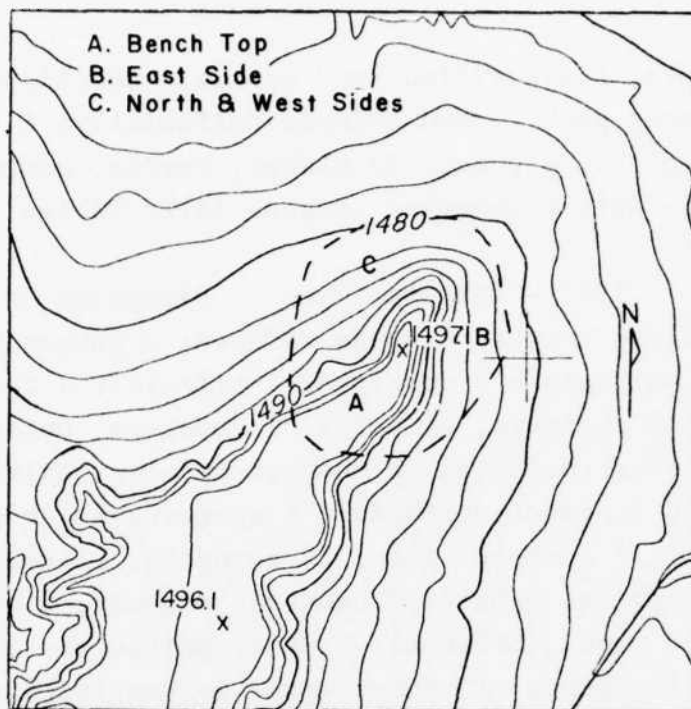


Figure 15. Topographic map of Site 41KX3 with collection areas indicated.

Deposits: The least disturbed portion of the site is the bench top, which is capped by a resistant layer of Permian sandstone. No topsoil is present on the end of the bench where the site is located, but there are small amounts in various places to the south of the site. The flats around the site are primarily weathered Permian clays. The slopes are littered with talus.

On the bench top the artifacts are superficial. They are located directly on the weathered sandstone bedrock surface. On the flats around the bench the artifacts are also superficial, but are lying on the sheetwashed Permian clays. Artifacts collected from the slopes were mixed with the talus debris.

Features: No features were located at the site.

Collections: 1972 - 61 specimens: 2 blanks, complete; 2 turtlebacks, unifacial; 3 flakes with unifacially chipped edge, straight to convex; 2 flakes with unifacially chipped

edge, concave; 1 silicified wood tablet, end chipped unifacially; 1 milky quartz pebble, end chipped unifacially; 1 chopper, bifacial, complete; 4 cores; 32 flakes, cortex, unworked; 13 flakes, non-cortex, unworked (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 548 specimens: 1 dartpoint or knife; 9 knives; 3 flake knives; 6 crude bifaces; 2 gouges, bifacial; 20 gouges, unifacial; 1 turtleback, bifacial; 1 turtleback, unifacial; 18 choppers, bifacial; 5 choppers, unifacial; 2 chipped pebbles, bifacial; 2 chipped pebbles, unifacial; 1 unclassified fragment, bifacial; 6 spokeshaves; 6 gravers; 1 scraper, end; 1 scraper, side; 32 scrapers, flake; 47 retouched flakes; 7 hammers, pebble; 2 hammers, discoid; 2 hammers, edge fragments; 3 manos, bifacial; 1 mano, unifacial; 2 manos, unidentified fragments; 1 stone, worn, unidentified fragment; 11 cores; 1 pebble, tested; 157 flakes, cortex, unworked; 138 flakes, non-cortex, unworked; 60 rocks, burned; 1 cartridge case, .45 Colt or Smith and Wesson Russian.

Analysis: The following percentages are calculated from both 1972 and 1977 collections. Excluding burned rock, 66.85 percent of the specimens recovered from the site are debitage and hammers. Cutting and scraping tools are 14.39 percent of the inventory; chopping tools are 5.28 percent; and grinding implements are 1.09 percent. Various classes constitute the remaining 12.39 percent. Most of these percentages are about as expected when compared with the percentages for all of the archeological sites (Table 7). Debitage is 3.57 percent below the expected while cutting and scraping tools are 5.20 percent above. The percentage of gouges is almost double the expected percentage.

The map of the bench top showing the positions of all of the specimens and specimen groups was carefully examined in an effort to detect any significant patterns in the distributions of artifact classes and materials. Although no such

patterns were detected, a computerized analysis of the data might reveal regularities which escaped our inspection, should the time and money ever become available for such analysis.

The 1977 collections were analyzed to see if any significant differences in frequencies of artifact classes from one area to another could be discerned. For most artifact classes there are too few items for a valid analysis. Only four tool classes contain 20 or more specimens. These are gouges (22), choppers (23), flake scrapers (31), and retouched flakes (47). Due to collecting errors and to the low numbers of artifacts from the north end and west side of the bench, tool numbers for these areas were combined, and only three collection areas were distinguished: 1) east side, 2) north end and west side, and 3) bench top. Percentages were then figured for each of the four tool classes, for other tools, and for all tools at each of the three collection areas (Table 12). The percentage of a particular tool class at a particular area was compared with the percentage of all tools at that area, the latter figure being regarded as an expected frequency.

Table 12. Numbers and percentages of selected tools by classes and areas for Site 41KX3.

Collection Areas	East side		North end & west side		Bench top		Totals	
Tool Classes	#	%	#	%	#	%	#	%
Gouges	11	50.00	7	31.82	4	18.18	22	100.00
Choppers	14	60.87	5	21.74	4	17.39	23	100.00
Flake scrapers	10	32.26	12	38.71	9	29.03	31	100.00
Retouched flakes	19	40.43	8	17.02	20	42.55	47	100.00
Other tools	162	43.78	95	25.68	113	30.54	370	100.00
All tools	216	43.81	127	25.76	150	30.43	493	100.00

Table 12 shows that the east side of the bench has more gouges and choppers than expected, and fewer flake scrapers and retouched flakes. The north end and west side has more gouges but fewer choppers, and more flake scrapers but fewer retouched flakes. The bench top has fewer gouges and choppers, about the expected frequency of flake scrapers, and more retouched flakes.

Although the specimen quantities are too low for much confidence, the concentration of gouges and choppers on the east side of the bench may indicate some kind of special processing activity in that area.

Table 24 tallies the materials of stone tools and lithic debitage found on the site during the 1977 investigations. The percentages given below include the 1972 collections. Exotic materials - Edwards flint (1.64%) and Tecovas jasper (0.18%) - constitute 1.82 percent of the tools and debitage. Percentages of other materials are: milky quartz (0.36%), Potter chert (30.00%), purple quartzite (33.45%), silicified wood (5.09%), quartzite (25.64%), and unidentified stone (3.64%).

Purple quartzite occurs 70.26 percent as hammers/debitage; 10.13 percent as cutting/scraping tools; 5.06 percent as chopping tools; and 14.55 percent as other tool classes. These purple quartzite percentages show an interesting similarity to the percentages of these artifact groups for all of the archeological sites (Table 7). At Site 41KX3, purple quartzite appears to have been used about as frequently for any one of these artifact groups as for any other.

Burned rock comprises 10.95 percent of the total inventory from Site 41KX3. Materials of the burned rock (Table 27) are Potter chert (33.33%), purple quartzite (6.67%), quartzite (56.67%), and unidentified stone (3.33%). Although the percentage of purple quartzite in the burned rock seems low compared with the percentage in other artifact classes, it

is 2.70 percent above the usual percentage for sites in the project area. Quartzites comprise a large majority of the burned rock at Site 41KX3.

Interpretations: Site 41KX3 may represent a specialized processing camp occupied perhaps repeatedly. A specialized processing station within the site is suggested for the east side of the bench. Purple quartzite was a highly valued lithic material by the occupants of the site. The gouges indicate occupation during the Archaic Stage, perhaps during the earlier part of the stage.

Site 41KX35

Location: The site is located west of the Antelope Flat Road on a Permian bench-edge. It is within the proposed reservoir pool (Fig. 10).

Observations: The site occupies the top and slopes of a bench which is oriented in an east-west direction. The site covers an area about 76 m in length by 52 m in width. The bench top is about 45 m long and 24 m wide at the western end. It tapers toward a point to the east (Fig. 16). Elevation on the bench top varies from an arbitrary elevation of 100.0 m at the western end to about 99.73 m toward the east end. The ground surface drops steeply along the edge of the bench toward the north and south, and then begins to slope more gently away from the bench.

The bench has a very sparse grass cover. Small juniper clumps occur mainly along the eroded edges (Fig. 17).

Chipped stone and burned rock are scattered across the top of the bench, spilling down the eroded slopes to the north and south. A major portion of the collections were recovered from the eroded slopes to the south of the bench top. No clusters of burned rock were found, but two small lithic concentrations were located on the bench.

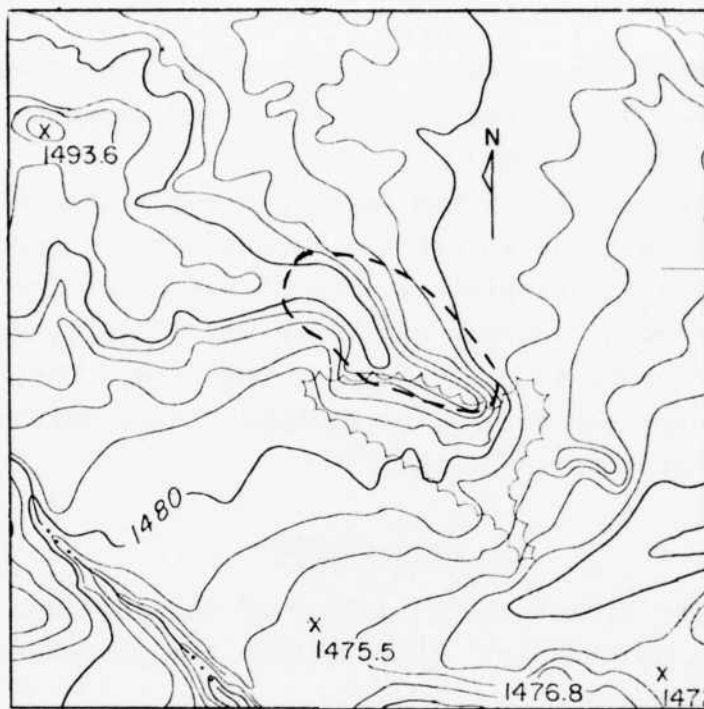


Figure 16. Topographic map of Site 41KX35.



Figure 17. Looking west across Site 41KX35.

A small wash is located approximately 150 m north of the site. Bluff Creek is located about 250 m to the southeast. A line of steep bluffs rises about 175 m west of the site.

Investigations: A grid center was established near the center of the site with base lines extending from this point in the four cardinal directions. Collections were then made by quadrants. Two collection methods were used in the collecting of each of the quadrants. Much of the site was collected by 1 m grid squares, while the rest of the site was collected by plotting the location of each artifact on a base map. The two small lithic concentrations were individually mapped and collected.

Deposits: The top of the bench, which is capped by a resistant layer of Permian sandstone, seems to be the least disturbed portion of the site. No topsoil or alluvium is present on the end of the bench where the site is located. West of the site, alluvium increases in depth from a few cm to about 1 m near the foot of the bluffs.

On and around the bench the cultural remains are surficial, lying directly on the weathered sandstone bedrock surface. Artifacts on the slopes were mixed with talus debris.

Features: A small concentration of lithic items was recorded in each of two grid squares. These are described below.

In Square S1-2/W20-21 a small concentration of 11 items was recorded. The main concentration consisted of 7 items within an area roughly 32 cm in diameter at the northeast corner of the square. One Potter chert flake and one burned rock were located about 1 m from the main concentration along the south side of the square. Two other Potter chert flakes were located about 80 cm from the main concentration near the northwest corner. Artifacts collected from this concentration include a flake knife (1), retouched flakes (3), unworked flakes, cortex (2) and non-cortex (1), burned rocks (2), and unmodified stone (1).

The second concentration, in Square S6-7/W21-22, also contained 11 items. All of these items were grouped in a small tight cluster, roughly 44 cm in diameter. This cluster was located near the center of the square. Specimens include a flake scraper (1), chipped pebbles (2), unworked flakes, cortex (4) and non-cortex (1), burned rocks (2), and an unmodified stone (1).

Collections: 894 specimens: 2 dartpoints, Trinity; 1 dartpoint, cf. Williams; 1 dartpoint or knife; 5 knives; 3 flake knives; 1 drill; 12 crude bifaces; 3 gouges, bifacial; 5 gouges, unifacial; 1 turtleback, bifacial; 2 turtlebacks, unifacial; 14 choppers, bifacial; 7 choppers, unifacial; 7 chipped pebbles, bifacial; 6 chipped pebbles, unifacial; 8 spokeshaves; 10 graters; 2 scrapers, end; 1 scraper, side; 27 scrapers, flake; 85 retouched flakes; 4 hammers, pebble; 1 hammer, discoid; 5 hammers, edge fragments; 1 mano, unifacial; 1 stone, worn, unidentified fragment; 5 flakes, worn; 28 cores; 7 pebbles, tested; 313 flakes, cortex, unworked; 197 flakes, non-cortex, unworked; 129 rocks, burned.

Analysis: Excluding burned rock, 72.55 percent of the collections are debitage and hammers. Cutting and scraping tools are 6.54 percent; chopping tools are 4.44 percent; and grinding implements are 0.13 percent. Other artifact classes make up the remaining 16.34 percent. These percentages deviate very little from what is expected (see Table 7). Most of the worn flakes found during the Truscott Reservoir investigations were found at this site (5 of 8).

Site 41KX35 contained many cores (28) of various materials. No extensive gravel deposits are located near the site, so the raw materials evidently were being transported to the site for working. Materials of the cores are Edwards flint (1), Potter chert (12), purple quartzite (7), silicified wood (1), quartzite (3), and unidentified stone (4). This is more cores than were found at any other site in the project area. This site also

produced more tested pebbles (7) than any other site. Materials are Edwards flint (1), Potter chert (3), quartzite (1), and unidentified stone (2). The site with the second highest numbers of these artifact classes is 41KX37, with 17 cores and 6 tested pebbles.

An analysis of the horizontal distribution of the artifacts indicates that only the items on the bench top may retain some integrity within the site. The distribution of the items found on the slopes seems to be patterned by erosion. The steepness of the slopes tends to support this idea.

An examination of the base map shows a small concentration of unworked flakes on the bench top, as indicated in Figure 18. This concentration measures about 9 m in diameter and the center is located near Point S3.5/W23. The eastern edge of the concentration bordered the western corners of squares S1-2/W20-21 and S6-7/W21-22, which contained the two small features described above. This concentration suggests the presence of a chipping station. No hammers were found in the concentration, but two were located at Point S7.5/W16.25, about 8 m away.

Table 24 shows the materials of lithic tools and debitage found at the site. The exotic materials are Edwards flint (1.18%) and Tecovas jasper (0.26%). The remaining materials are milky quartz (0.13%), Potter chert (42.09%), purple quartzite (18.95%), silicified wood (2.75%), quartzite (26.80%), and unidentified stone (7.84%). Potter chert is the predominant material. Purple quartzite and other quartzites both occur in higher percentages than normal at the site. High and low percentages of lithic materials at the sites in this area may in some cases reflect variations in the composition of the gravel sources. In other cases, different preferences of the users may be reflected.

Compared with the quantity of tools and debitage found at the site, burned rock was remarkably scarce (Table 27).

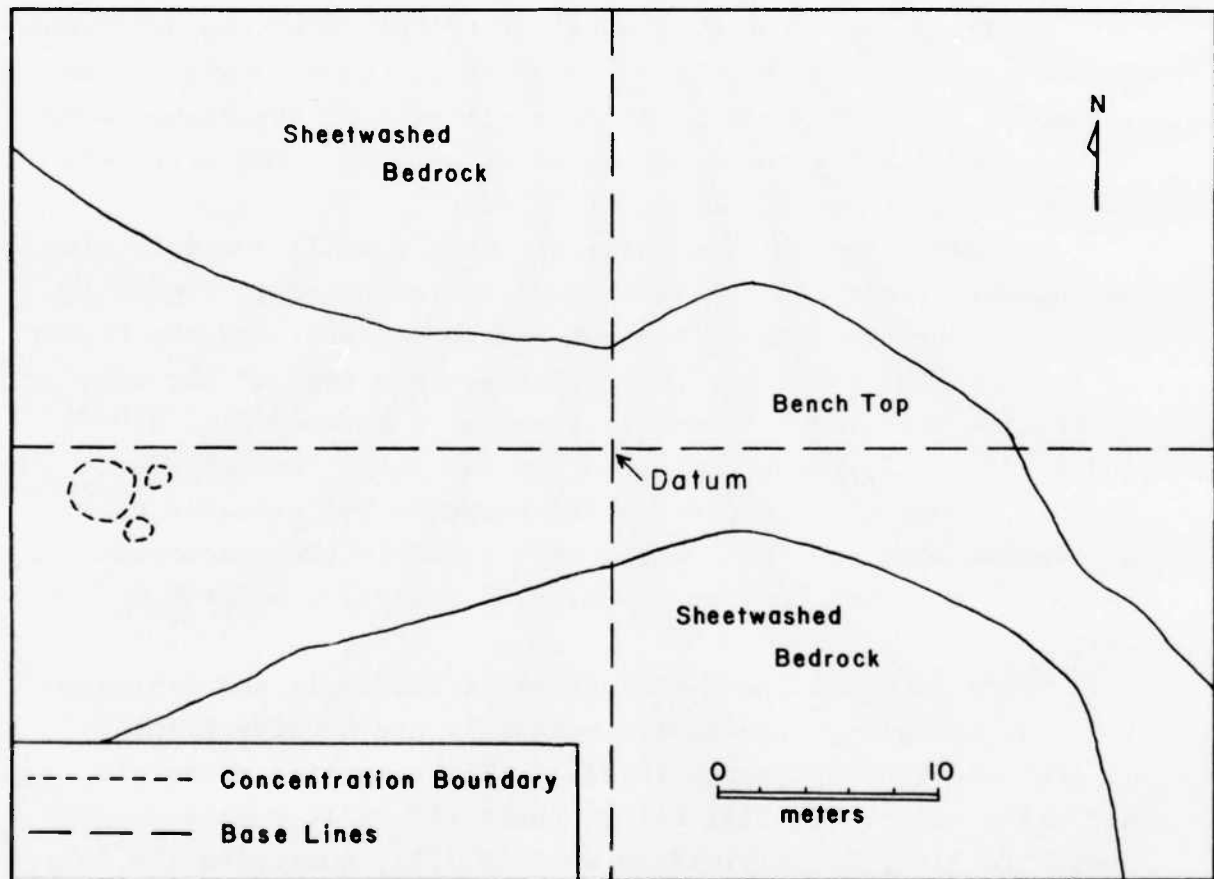


Figure 18. Map of Site 41KX35 with artifact concentrations indicated.

Fire-cracked rock is predominantly quartzite (56.69%), with Potter chert (34.88%) being much less abundant. The percentages for purple quartzite (2.32%) and unidentified stone (3.10%) seem to be low, but are near the expected figures for the project area.

Interpretations: The two Trinity points and a cf. Williams point suggest an occupation during the Late Archaic Substage. The gouges may represent an earlier occupation during the Archaic Stage. The high numbers of cores, tested pebbles, and unworked flakes suggest a workshop. On the other hand, the high incidence of tools (28.76%) indicates a camp. It is suggested that the site may have been occupied at different times for different purposes, serving sometimes mainly as a camp and other times mainly as a workshop.

Site 41KX37

Location: This site is located to the west of the Antelope Flat Road (Fig. 10). It is on a Permian bench-foot within the reservoir pool.

Observations: The site occurs primarily on the slopes to the southeast of a Permian bench (Fig. 19). Lithics and burned rock are scattered thinly but widely across the eroded slopes toward the Antelope Flat Road. The site covers an area approximately 129 m north-south by about 100 m east-west. The southern and southeastern edges of the site are badly gullied, and sheetwashing has been severe across most of the site.

A very sparse grass cover is found on the southern part of the site, but the juniper cover here is dense. The northern part of the site has a heavy grass cover, but has been grubbed so that juniper remains only along the steep edges of the bench.

The high bench to the northwest of the site is flat, with a good grass cover and some juniper and a little mesquite. In a few places on the top of the bench a small amount of topsoil occurs. Over the rest of the bench top weathered bedrock is exposed.

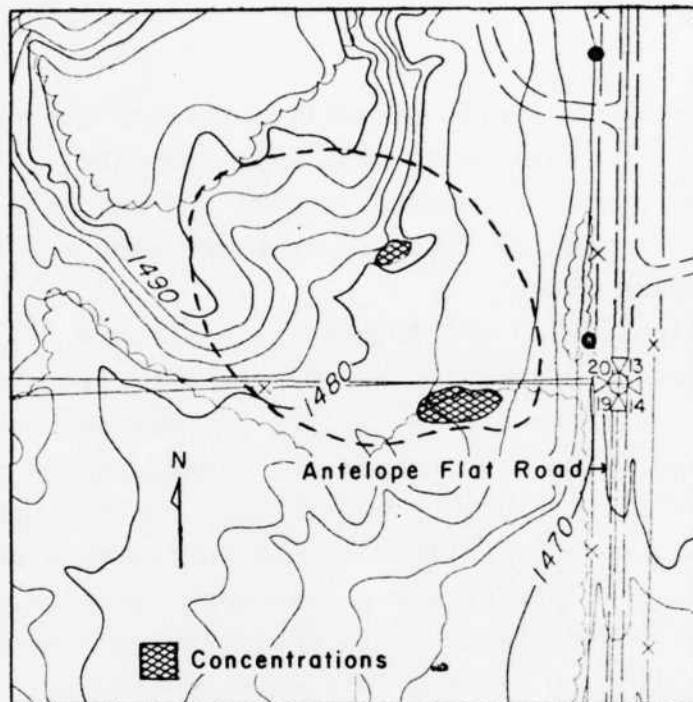


Figure 19. Topographic map of Site 41KX37 with artifact concentrations indicated.

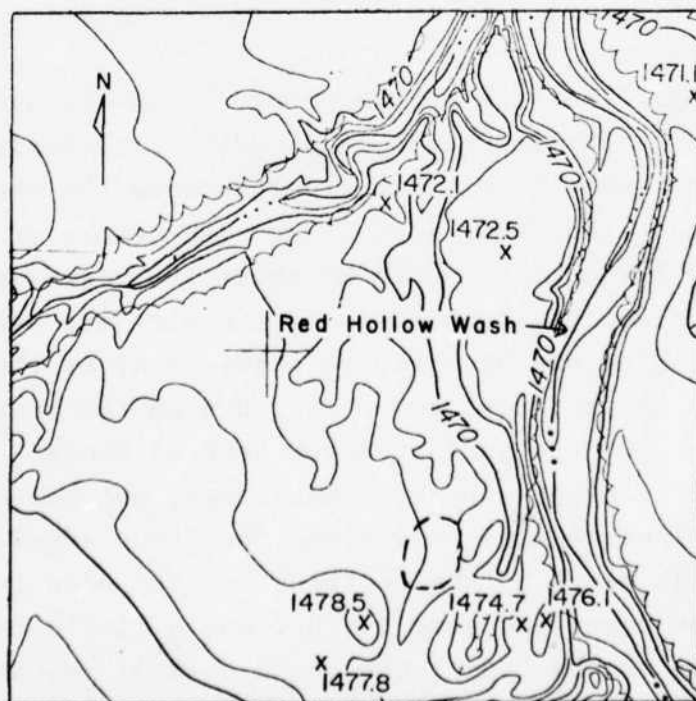


Figure 20. Topographic map of Site 41KX50.

Very little cultural material occurs on the bench top. Artifacts are located mainly downslope and to the southeast, where some clustering may be due to erosion.

Investigations: A grid center was established in the southern part of the site. Base lines were extended from this point in the four cardinal directions. Collections were then made by quadrants. Two methods were employed in the controlled collecting of the four quadrants. A grid of 3 m squares was laid out in the southeast quadrant and also in the northwest quadrant covering an area from N57/W0-27 to N66/W0-27. Collections were then made from these grids by 1 m squares within the 3 m squares. The rest of the site was collected by plotting the artifact locations directly on a base map.

Deposits: The high bench to the northwest of the site is capped with a thin resistant layer of Permian sandstone. Topsoil is spotty on the bench top. Patches of thin topsoil on the rest of the site result from the weathering of the Permian clays on the slopes below the bench. Weathered gypsum crops out in the western part of the site.

North of the site, and closer to North Prong Creek, alluvium can be found in increasing depths. The wide, densely vegetated floodplain of North Prong Creek drains to the southeast.

Cultural remains at the site were found lying directly on the weathered bedrock. No testable deposits were located.

Features: A modern horse burial is located on the site. This feature was not excavated.

Collections: 409 specimens: 1 dartpoint, Palmillas; 1 dartpoint, unidentifiable fragment; 1 dartpoint, preform; 2 dartpoints or knives; 4 knives; 2 flake knives; 5 crude bifaces; 4 gouges, bifacial; 13 gouges, unifacial; 3 choppers, bifacial; 3 chipped pebbles, bifacial; 7 chipped pebbles, unifacial; 2 spokeshaves; 6 graters; 12 scrapers, flake; 42 retouched flakes; 11 hammers, pebble; 2 hammers, discoid; 13 hammers, edge fragments; 1 mano, bifacial; 2 manos, unidentified fragments;

2 flakes, worn; 17 cores; 7 pebbles, tested; 114 flakes, cortex, unworked; 47 flakes, non-cortex, unworked; 86 rocks, burned.

Analysis: Excluding burned rock, 65.02 percent of the collections are hammers and debitage. Cutting and scraping tools are 11.46 percent; chopping tools are 4.02 percent; and grinding implements are 0.93 percent. The remaining 21.54 percent consists of other artifact classes. Gouges comprise 45.95 percent of the cutting and scraping tools, or 5.26 percent of the lithics other than burned rock. Chopping tool percentages are about what is expected, but it should be noted that chipped pebbles, included here, are higher than expected and choppers are lower. The percentage of grinding implements is low, with only 1 mano and 2 mano fragments represented.

This site contained the second highest number of both cores (17) and tested pebbles (6) of any site recorded, exceeded only by Site 41KX35. No extensive gravel deposits were found near the site. These lithic supplies apparently were being transported to the site for working. Materials of the cores are Potter chert (9), purple quartzite (2), silicified wood (1), quartzite (1), and unidentified stone (4). Materials of the tested pebbles are Potter chert (2), silicified wood (1), quartzite (2), and unidentified stone (1). Percentages of core materials, with the exception of quartzite and unidentified stone, are fairly close to those of total lithic materials from the site given below. The cores and tested pebbles are fairly evenly distributed among the southeast, northeast, and northwest quadrants.

An analysis of the horizontal distribution of the lithic artifacts indicates two main clusterings (Fig. 19). The smaller of the two is centered at about Point N63/W17. The long axis of this clustering is about 18 m in length and is oriented in a northwest-southeast direction. The northeast-southwest width is about 8 m. Artifacts from this concentration include 3 knives, 3 crude bifaces, 3 gouges, 2 choppers, 1 hammer,

2 manos, and numerous retouched and unworked flakes. Burned rock also occurs in noticeable quantities.

A second larger clustering is located with its center near Point S6/E24. The long axis is east-west and is about 42 m in length. Width is about 30 m. The concentration of lithic artifacts is not as heavy here as in the smaller clustering to the northwest, but seems to be slightly heavier than over the rest of the site. Included in this concentration are 1 crude biface, 5 gouges, 9 hammers, several retouched flakes, and many unworked flakes and burned rocks.

A secondary concentration within the larger clustering is found in the area of about S14-18/E30-35. This is along the southeastern edge of the larger concentration. The secondary concentration contains a hammer, a retouched flake, and numerous unworked flakes and burned rocks.

The two main clusterings of artifacts suggest separate work stations within the site. The larger concentration to the southeast contains no knives, end or side scrapers, or manos, but it does contain 5 gouges and numerous hammers. The smaller concentration to the northwest also contains 3 gouges and a hammer, and lacks end or side scrapers, but it does contain 3 knives and 2 manos. The different tool assemblages of the two concentrations suggest different kinds of processing. The larger clustering with the higher percentage of gouges may represent an earlier occupation than the smaller clustering.

As shown by Table 24, three exotic lithic materials occur at the site: Alibates agate (0.31%), Edwards flint (2.48%), and Tecovas jasper (0.31%). The local materials are milky quartz (0.93%), Potter chert (56.97%), purple quartzite (10.84%), silicified wood (4.33%), quartzite (15.17%), and unidentified stone (8.67%). Percentages for all lithic materials are fairly close to the expected figures, except for Potter chert, which is high.

Materials of the burned rock (Table 27) are milky quartz (1.16%), Potter chert (39.53%), purple quartzite (11.63%), quartzite (46.51%), and unidentified stone (1.16%). Quartzite is most common, followed closely by Potter chert.

Interpretations: The site has relatively high numbers of all tool classes except choppers, end and side scrapers, and manos. It is high in numbers of gouges, chipped pebbles, hammers, cores, and tested pebbles. The site may have served as both a camp and a workshop, possibly utilized at different times for different purposes. A Palmillas point suggests an occupation during the Terminal Archaic. The gouges suggest a major occupation earlier in the Archaic sequence.

Site 41KX50

Location: The site is located between Red Hollow Wash and one of its major eastward draining tributaries (Fig. 10). It is on a Permian terrace within the reservoir pool.

Observations: The site is situated on a rise on the Permian terrace (Fig. 20). The terrace is flat in all directions immediately around the site. The high point of the site is approximately 60 cm above the level of the surrounding flats. The site covers an area about 36 m north-south by 40 m east-west. A small wash borders the western edge of the site and a somewhat larger wash borders the eastern edge. Red Hollow Wash is located about 229 m to the east, and the tributary is about 600 m to the northwest.

The ground surface is bare on the site. A juniper clump occurs near the center of the site and another on the eastern part. Around the site, vegetation is abundant to the east but sparse in other directions.

A small stock pond has been dug into the wash bordering the eastern edge of the site. It is located near the south-east corner of the site and probably was dug here to take advantage of natural seep springs. The springs may be a

reason for the site being in this location. The stock pond is full of cattails. If they were growing around the springs in prehistoric times, their edible roots would have been a convenient source of food for the inhabitants of the site.

Investigations: A grid center was established near the center of the site. From grid center, a second point was marked at S20.7/E31. A single method of controlled collecting was employed in recovering the artifacts from the site. From each of the two grid points, specimen locations were surveyed by alidade and plotted on a base map of the site. Elevations were taken at 3 m intervals along base lines in the four cardinal directions from grid center.

Deposits: The terrace on which the site is located is composed of Permian bedrock. The high area may be due to a more resistant, thin sandstone and gypsum cap. The ground surface on the site is weathered clay, gypsum, and sandstone. No alluvium is present on the site. Alluvial deposits are located to the east along the small wash, and more are further east toward Red Hollow Wash. The alluvial deposits nearest the site were carefully examined, but no cultural remains were found. All of the cultural remains discovered were lying directly on the Permian bedrock.

Features: No features were found at the site.

Collections: 131 specimens: 1 dartpoint, Carrizo; 1 dartpoint, unidentifiable fragment; 1 dartpoint or knife; 3 knives; 1 gouge, bifacial; 1 gouge, unifacial; 1 turtleback, unifacial; 4 choppers, bifacial; 2 choppers, unifacial; 1 chipped pebble, bifacial; 2 chipped pebbles, unifacial; 1 spokeshave; 2 graters; 4 scrapers, flake; 19 retouched flakes; 2 hammers, pebble; 1 hammer, discoid; 5 hammers, edge fragments; 1 mano, bifacial; 1 mano, unidentified fragment; 2 cores; 36 flakes, cortex, unworked; 8 flakes, non-cortex, unworked; 29 rocks, burned.

Analysis: Excluding burned rock, hammers and debitage constitute 53.92 percent of the specimen inventory. Cutting and scraping

tools are 10.78 percent; chopping tools are 8.82 percent; grinding implements are 1.96 percent; and other tool classes make up the remaining 24.52 percent. Retouched flakes comprise 18.63 percent of the specimens. This accounts for the high percentage of "other tool classes."

Analysis of the horizontal distribution of the lithic artifacts indicates one light concentration (Fig. 21) the center of which is near Point S10/E5. This concentration is oblong, extending from near S6/E2 to about S15/E9. It is roughly 6.5 m wide. Artifacts are primarily unworked flakes and burned rocks. Also included are retouched flakes, 1 pebble hammer, 1 gouge, and 1 dartpoint fragment. A knife, a gouge, and 2 dartpoints are located just east of the concentration.

Cultural material is also somewhat concentrated from the southern end of the above concentration eastward for about 25 m. Artifacts include knives, choppers, and hammers. These tools may indicate the former presence of another work area which has been scattered by erosion.

Exotic lithic materials at the site (Table 24) are scarce, being represented only by Edwards flint (1.96%). Other materials are milky quartz (1.96%), Potter chert (53.92%), purple quartzite (2.94%), silicified wood (5.88%), quartzite (15.69%), and unidentified stone (17.65%). At Site 41KX50, emphasis seems to have been placed on Potter chert, quartzite, and unidentified stone from the local gravel sources.

Burned rock at the site is sparse (Table 27). The small sample is mainly quartzite (51.72%) followed by Potter chert (37.93%). The remaining percentage (10.35%) is divided between milky quartz and unidentified stone.

Interpretations: The Carrizo point suggests an occupation during the Terminal Archaic Substage. One small work area may be indicated by the lithic concentration. The site seems to have been a brief camp occupied by a small group.

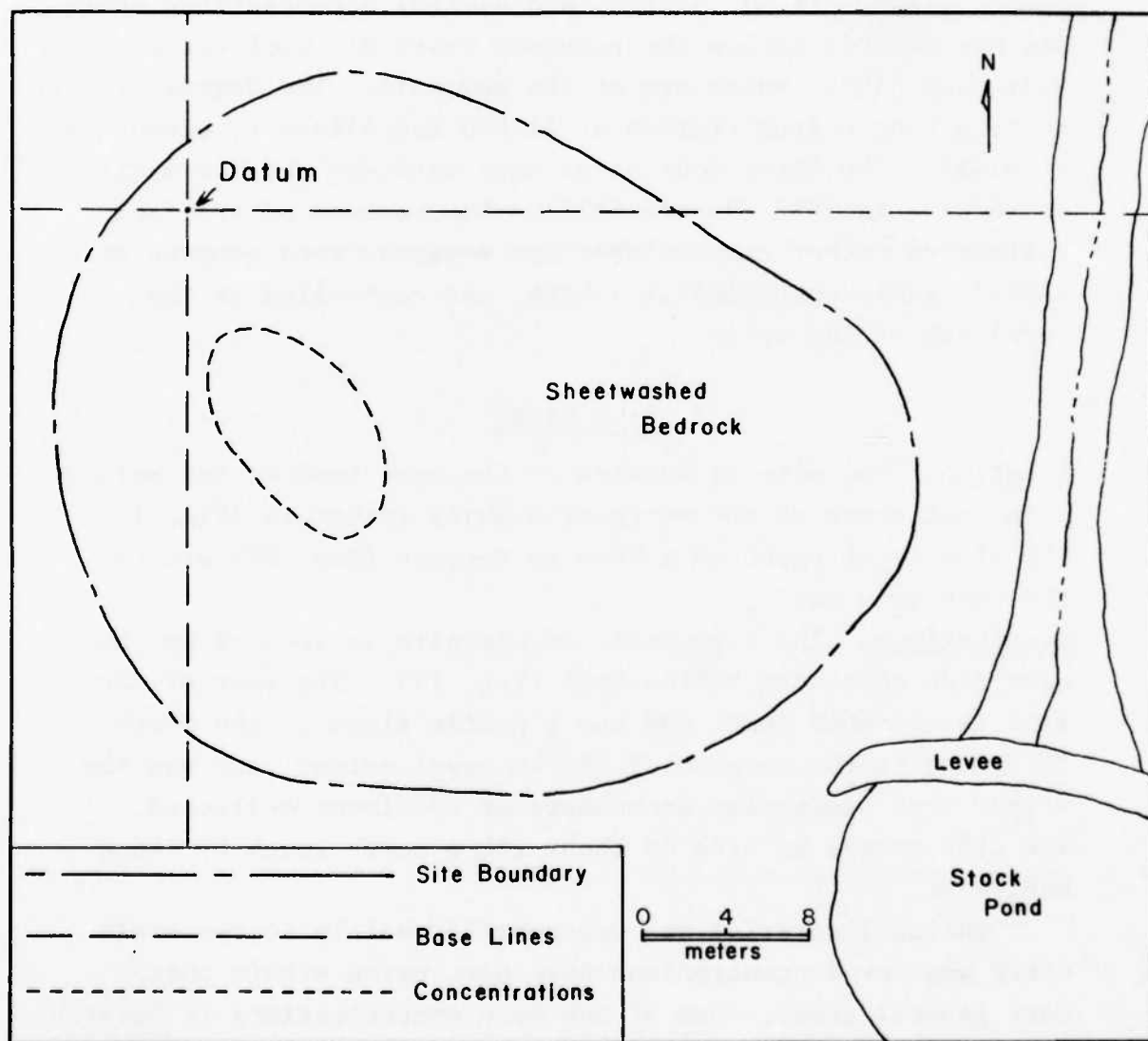


Figure 21. Map of Site 41KX50 with artifact concentration indicated.

TESTED SITES

The seven sites which were test-excavated (41KX2, 41KX4, 41KX5, 41KX6, 41KX33, 41KX34, and 41KX68) are described below. All are located within the proposed reservoir pool except 41KX4 and 41KX5, which are at the dam axis. The degree of testing ranges from limited at 41KX33 and 41KX68 to extensive at 41KX5. The first four sites were recorded and had limited collecting in 1972 (Hughes 1972). The methods of artifact collection, other than in the test squares, were general at 41KX33; semi-controlled at 41KX68; and controlled at the remainder of the sites.

Site 41KX2

Location: The site is located on the west bank of Red Hollow Wash just north of the mouth of a major tributary (Fig. 10). The site is situated on a Permian terrace (Fig. 22) within the reservoir pool.

Observations: The high point of the site is located on the east side above Red Hollow Wash (Fig. 23). The rest of the site is somewhat lower and has a gentle slope to the north. This site is the largest of any in areal extent, and was the second most productive in numbers of specimens collected. The site covers an area of about 180 m north-south by 166 m east-west.

Cultural material was concentrated mainly in two areas. Other smaller concentrations have been noted within these more general areas. One of the main concentrations is located in the southeast quadrant on the high point along Red Hollow Wash. The second concentration is in the northwest quadrant. The remaining portions of the site contained a light but constant scatter of both lithics and burned rock.

Erosion has been severe on portions of the site. Evidence of sheetwashing occurs over the entire site. Gullies have



Figure 22. Looking northwest across Site 41KX2.

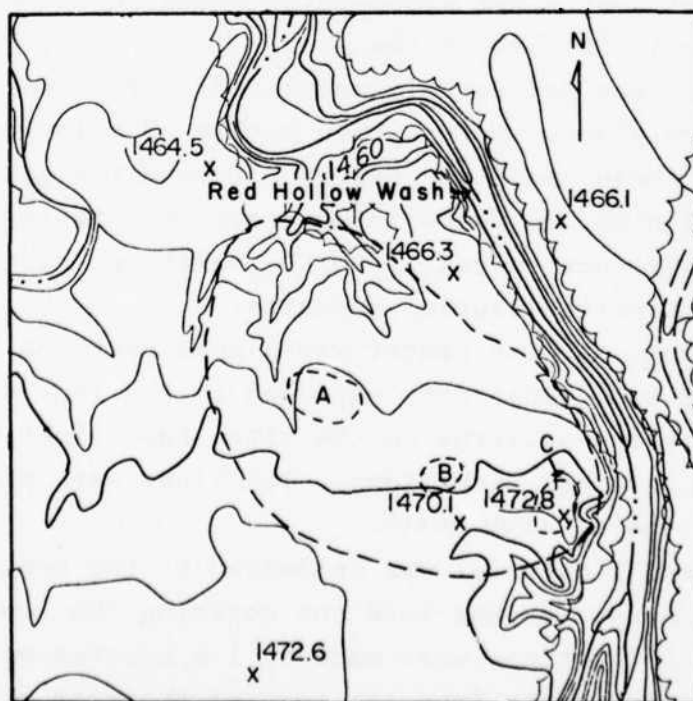


Figure 23. Topographic map of Site 41KX2 with artifact concentrations indicated.

formed in both the southeast and northwest quadrants. Small gullies draining in an easterly direction join Red Hollow Wash to the south of the high point of the site. During our field work, one part of this gully system remained wet, possibly indicating small seep springs. These may explain the presence of a lithic concentration in this area.

The concentration in the northwest quadrant is near the gully system developed here. Although no evidence of springs was noted during the fieldwork, small seeps may have been present in the past. This could explain both the extensive gullying and the location of the concentration.

Red Hollow Wash drains northward into Bluff Creek. It borders the site on the east, bends sharply westward to the north of the site, and then bends sharply northward again at the point where it is joined by the gully system in the northwest quadrant of the site. Water was found in Red Hollow Wash throughout the duration of the fieldwork, much of the time as running water. At other times water could be found by digging a small hole in the bed of the wash.

The site was not densely vegetated. Grass was present only in a few places where a thin mantle of alluvium is preserved. On these small patches of alluvium the grass cover is heavy. Juniper is found in moderate amounts across the site. Mesquite occurs mainly to the north and east where there are extensive alluvial deposits.

Investigations: A grid center was placed near the center of the site and base lines were extended in the four directions. Due to vegetation patterns on the site, base lines were not laid out in cardinal directions. The lines were placed about 14° to the east of true north.

Artifactual material was collected by two control methods. A grid of 3 m squares was laid out covering the area of S0-15/E63-75, and collections were made by 1 m squares within each 3 m square. Artifacts from the rest of the site were collected

by plotting the location of individual specimens or groups of specimens on the base map.

Six test pits were dug at the following locations: N0-1/W26-27, N15-16/W12-13, N25-26/E62-63, S0-1/W12-13, S17-18/W20-21, S12-14.5/E48-51. The four test pits in the northwest and southwest quadrants were placed in small alluvial deposits to check the depth of the deposit, and to try to determine whether the artifacts occurred in or below the alluvium. No artifacts were located. The test pit at S12-14.5/E48-51 was placed in a small patch of alluvium beneath a juniper clump. This pit was excavated to try to determine the presence or absence of artifacts in or below the alluvium, and to check for a possible hearth suggested by scattered sandstone slabs. No artifacts or features were located. The test pit at N25-26/E62-63 was dug to check for a possible hearth suggested by a sandstone slab eroding from a cutbank. No artifacts or features were located. All of the test pits were excavated by troweling and shovel shaving through the alluvial deposit to the top of the weathered bedrock. All soil was passed through 1/4 inch hardware cloth.

Deposits: The site is situated on a Permian terrace of weathered clays, gypsum, and some sandstone. A small area west of grid center contains a thin mantle of alluvium. The four test pits excavated in the northwest and southwest quadrants revealed that this alluvial deposit is only about 7 cm in thickness and is lying directly on the weathered Permian bedrock. Juniper clumps across the site afford some protection against erosion, and small patches of alluvium occur around the bases of these clumps. This is the kind of deposit tested at S12-14.5/E48-51. North of the site and east of Red Hollow Wash, alluvial deposits of considerable depth are found. These deposits are dissected by Red Hollow Wash.

All of the artifactual material collected at the site was lying directly on the weathered bedrock. All alluvial deposits

on and around the site were carefully examined, and no cultural material was found on the surface of these deposits. No artifacts were found either in or below these deposits in the test pits. It could not be determined whether this alluvium was deposited before, during, or after occupation at the site.

Features: No features were found at the site.

Collections: 1972 - 231 specimens: 1 dartpoint, Abasolo; 1 dartpoint, Tortugas; 1 dartpoint, Ellis; 1 dartpoint, cf. Ensor; 1 knife, trianguloid; 2 dartpoints or knives, medial fragments; 4 blanks, complete; 10 blanks, end fragments; 7 gouges, bifacial, complete; 1 gouge, bifacial, base fragment; 11 gouges, unifacial, complete; 1 turtleback, unifacial; 2 scrapers, end, plain; 2 scrapers, end, base fragments; 1 scraper, side, complete; 1 graver, end, single; 1 graver, end, double; 3 graters, corner, single; 1 scraper-graver; 23 flakes with unifacially chipped edge, straight to convex; 19 flakes with unifacially chipped edge, concave; 1 flake with unifacially chipped edge, convex and concave; 3 silicified wood tablets, end chipped unifacially; 4 choppers, bifacial, complete; 1 chopper, unifacial, complete; 2 choppers, unifacial, edge fragments; 1 hammer; 1 grinding slab, concave wear, fragment; 3 grinding slabs, plano-concave wear, fragments; 8 cores; 77 flakes, cortex, unworked; 31 flakes, non-cortex, unworked; 5 rocks, burned (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 997 specimens: 1 dartpoint, Catan; 1 dartpoint, Elam; 1 dartpoint, Ellis; 1 dartpoint, Frio; 1 dartpoint, Lange; 1 dartpoint, Wells; 1 dartpoint, unidentified fragment; 2 dartpoints or knives; 7 knives; 4 flake knives; 1 drill; 19 crude bifaces; 6 gouges, bifacial; 18 gouges, unifacial; 1 turtleback, bifacial; 4 turtlebacks, unifacial; 6 choppers, bifacial; 6 choppers, unifacial; 10 chipped pebbles, bifacial; 9 chipped pebbles, unifacial; 4 unclassified fragments, bifacial; 6 spokeshaves; 15 graters; 3 scrapers, end; 6 scrapers, side; 3 scrapers, unclassified

fragments; 28 scrapers, flake; 109 retouched flakes; 8 hammers, pebble; 3 hammers, discoid; 8 hammers, edge fragments; 2 manos, bifacial; 8 manos, unidentified fragments; 15 cores; 4 pebbles, tested; 235 flakes, cortex, unworked; 183 flakes, non-cortex, unworked; 255 rocks, burned.

Analysis: Excluding burned rock (and including both 1972 and 1977 collections), hammers and debitage constitute 59.21 percent of the collections. Cutting and scraping tools are 15.94 percent; chopping tools are 4.24 percent; and grinding implements are 1.45 percent. The remainder of the tool classes amount to 19.16 percent. It is interesting to note that there are 21 gravers (2.17%) from the site. This is double what is normally expected (see Table 15). The percentage for cutting and scraping tools is 6.75 percent above normal. This may be explained by the large number of gouges at the site. Gouges comprise 4.45 percent of the inventory, almost double the expected frequency. Other scrapers comprise 9.73 percent of the cutting and scraping tools. It is also interesting to note that the 1972 collections contain 4 grinding slab fragments but no manos; and that the 1977 collections contain 10 manos and fragments but no grinding slabs.

An analysis of the horizontal distribution of the lithic artifacts (1977 investigations) indicates three main areas of concentration (Fig. 23). One concentration (A) is near the gullies in the northwest quadrant. The other two (B & C) are near the eastern edge of the site in the southeast quadrant around the high point.

Concentration A is on a high point at the heads of several small gullies. A scatter of sandstone slabs may indicate the former presence of a hearth. Some burned Potter chert and quartzite occurs but not in great quantities. Six gouges and 2 dartpoints (a Lange and an unidentifiable fragment), as well as numerous unworked flakes, occur in this part of the site. The concentration measures about 20 m by 25 m.

Concentration B is along the west edge of the high point on the east side of the site, and measures about 18 m by 25 m. Three sub-areas might be recognized. There is a small cluster of burned rock which may be the remains of an eroded hearth. Some of this burned rock occurs as sandstone slabs, which prompted the test pit at S12-14.5/E48-51. A second sub-area contained 2 dartpoints (a Catan and an unidentifiable fragment), two gouges, a chopper, unworked flakes, and some burned rock. A third sub-area contained hammers, crude bifaces, and unworked flakes.

Concentration C, measuring approximately 20 m by 25 m, is located on the high point. It can be divided into 2 sub-areas. One sub-area contained 2 hammers, 3 crude bifaces, and numerous unworked flakes. The second sub-area contained 3 gouges, 1 hammer, and 1 crude biface, plus numerous unworked flakes. Burned rock is scattered across this concentration.

In terms of the entire site, the northwest quadrant contained the highest numbers of specimens. Other than in the above described concentrations, artifactual material is scattered across the site with no apparent pattern.

Three exotic lithic materials occur at the site (1972 and 1977 investigations). These are Alibates agate (0.33%), Edwards flint (4.30%), and Tecovas jasper (1.21%). The remaining lithic materials, which can be found in local sources, are milky quartz (1.77%), Potter chert (59.16%), purple quartzite (6.95%), sandstone (0.44%), silicified wood (4.64%), quartzite (12.58%), and unidentified stone (8.61%). The lithic materials which are lower in frequency than expected are purple quartzite and other quartzites. Potter chert is higher. Several other materials are higher than expected, but do not seem to be significantly higher.

Burned rock occurs in low numbers at the site compared with the numbers of other lithics. Burned rock materials are Edwards flint (0.38%), milky quartz (1.54%), Potter chert

(50.38%), purple quartzite (5.38%), silicified wood (0.38%), quartzite (38.08%), and unidentified stone (3.85%). Burned sandstone does occur, but with a low frequency, and is not represented in our sample.

Three of the dartpoint types found during the 1972 investigations at Site 41KX2 are not described in the collections section of this report. These three types are Abasolo (1), Ensor (1), and Tortugas (1). Suhm and Jelks (1962:165) state that Abasolo points are most common in the Rio Grande valley below Laredo and become progressively less frequent northward into central Texas. Suggested dates for the type are from about 5000-3000 B.C. until about A.D. 500. Neither Weir (1976a, 1976b) nor Patterson (1977) includes the Abasolo type in his central Texas Archaic sequence. Weir and Patterson both assign the Ensor type to the Twin Sisters Phase. They assign the Tortugas type to the Clear Fork and San Geronimo phases.

Interpretations: The dartpoints suggest occupations at Site 41KX2 during the Early, Late, and Terminal substages of the Archaic Stage. Gouges suggest occupations during the earlier substages.

The abundance of gouges and gravers may indicate some kind of specialized processing activity. The presence of several end and side scrapers and 11 dartpoints suggests a greater dependence on game than is suggested by the assemblages at other sites in the project area. It must be kept in mind, however, that the "assemblage" from this site is most likely the result of several occupations spanning hundreds or thousands of years.

A possible explanation for the three areas of concentration at the site is that each was occupied at different times during the history of the site. Another possibility is that they were occupied simultaneously, with a small family group at each area. The concentrations may be located where they are because of possible seep springs in the gullies near each location.

From the quantity and diversity of the assemblage at Site 4lKX2, it is suggested that the site was occupied repeatedly for an extended period of time, possibly as a specialized processing station and camp. The span of utilization of the site may have been the entire Archaic Stage.

Site 4lKX4

Location: This site is on a Pleistocene rim near the proposed dam axis (Fig. 10). It is on the east rim of the Bluff Creek valley. A Corps of Engineers survey marker labeled P.O.T. 63+05.18 is on the site.

Observations: The site is situated on the highest portion of the rim. It has a heavy grass cover. Juniper occurs along the eroded edge of the rim and on the slopes below the site, and mesquite is present, but only infrequently.

There is a gentle downward slope to the east, away from the rim. A large draw to the east of the site drains to the northeast.

The site has only a light lithic scatter but an abundance of burned rock. An undisturbed burned rock cluster (Feature 1) is located at S1-1.6/W11.4-12. An eroded cluster of burned rock (Feature 2) is located at Point N6.5/E6.5, with a diameter of roughly 1 m. Fire-cracked rock from this cluster is scattered for several meters downslope. Fire-cracked rock is also very abundant along the eroded edge between Feature 2 and the western end of the site. Lithics and burned rock decrease rapidly from the north edge of the site southward.

Investigations: Using the Corps of Engineers survey marker as grid center, a base line was laid out from the marker to Point N0/W30. From this base line ten 1 m grid squares were laid out (Fig. 24). These are S0-1/W5-6, S0-1/W11-12, S0-1/W12-13, S1-2/W7-8, S1-2/W11-12, S1-2/W12-13, S1-2/W26-27, S3-4/W20-21, S8-9/W3-4, and S19-20/W6-7. The area of S0-2/W11-13

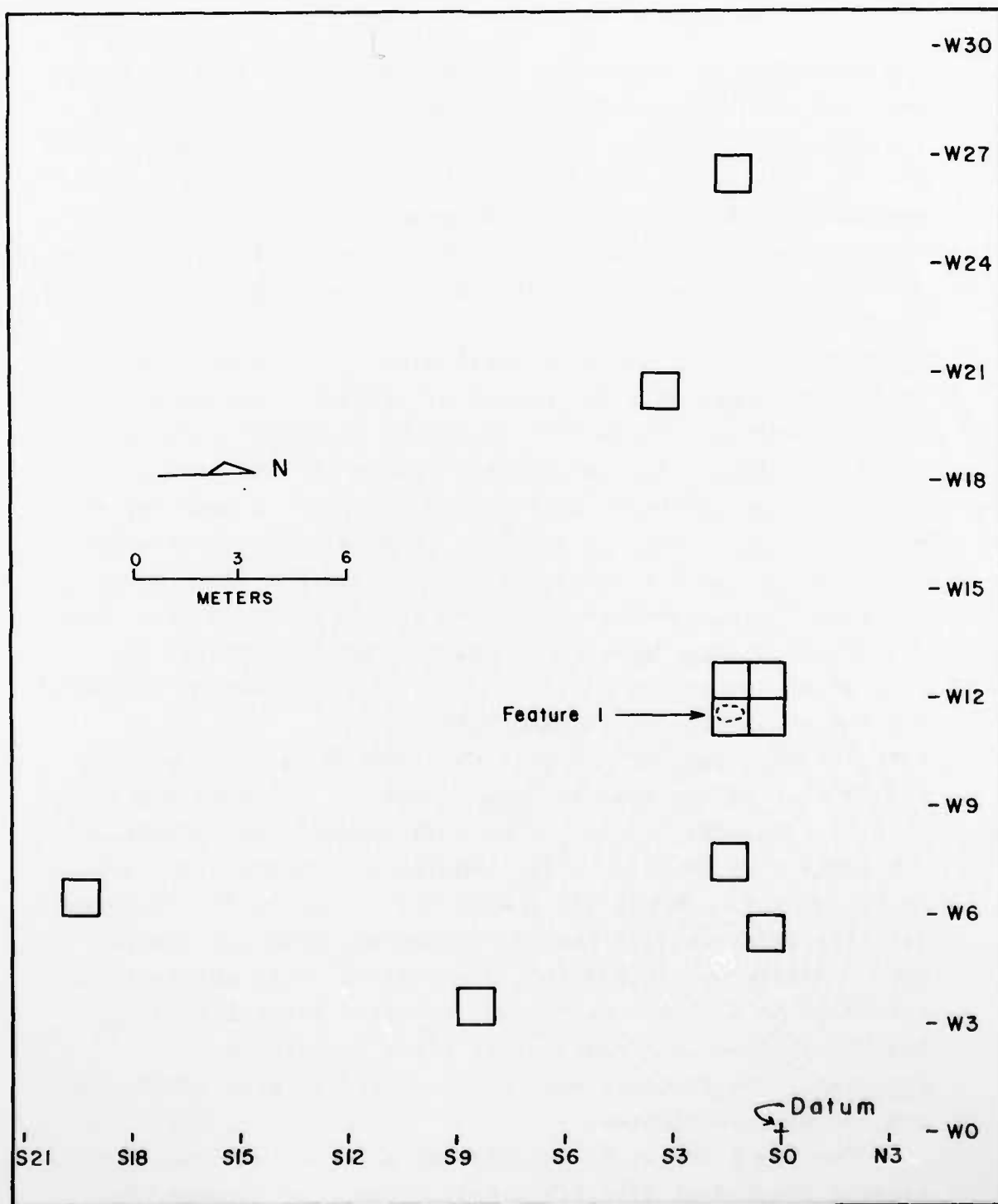


Figure 24. Map showing excavated squares at Site 41KX4.

was excavated to completely expose Feature 1. No additional features and very few cultural items were located with the testing. Grid squares were excavated by troweling and shovel shaving to sterile soil at depths of about 20 cm. All dirt was screened through 1/4 inch hardware cloth. Eleven soil samples were collected from the test pits. All surface collections were made by plotting the locations of the artifacts on the base map.

Deposits: The rim along the east side of the Bluff Creek valley is capped by a few meters of reddish-brown sand, probably of Pleistocene age. It is in the uppermost part of this deposit that the site is located. Below the site and a few meters to the northwest on the eroded slopes, a pond deposit of grayish-white clay is exposed. Many similar Pleistocene pond deposits were examined by Schultz (1972:2-51 to 2-53) for paleontological resources. No fossil material was found eroding from this deposit. A light scatter of gravel is present on the eroded slopes. Below the Pleistocene sediments are the shales of the Permian redbeds.

The test pits at the site were placed in the upper few centimeters of the reddish-brown deposit. The soil was sandy to silty and very compact. Two soil samples were submitted for grain size analysis. The results are reported by Taylor in Appendix I. Sample No. 1 (KX4.143, S1-2/W26-27, 10-20 cm) is interpreted to be a heavily weathered, reworked fluvial sand. Sample No. 2 (KX4.144, S1-2/W26-27, 0-10 cm) is interpreted to be a highly weathered, reworked fluvial sand that has had aeolian sand added to it after deposition.

Features: Two features were investigated at Site 41KX4. Both are burned rock clusters.

Feature 1 (Figs. 25 and 26) was a relatively undisturbed cluster located at S1-1.6/W11.4-12. Four 1 m squares were opened to completely expose the feature, although it was entirely within one square. A small amount of rock was

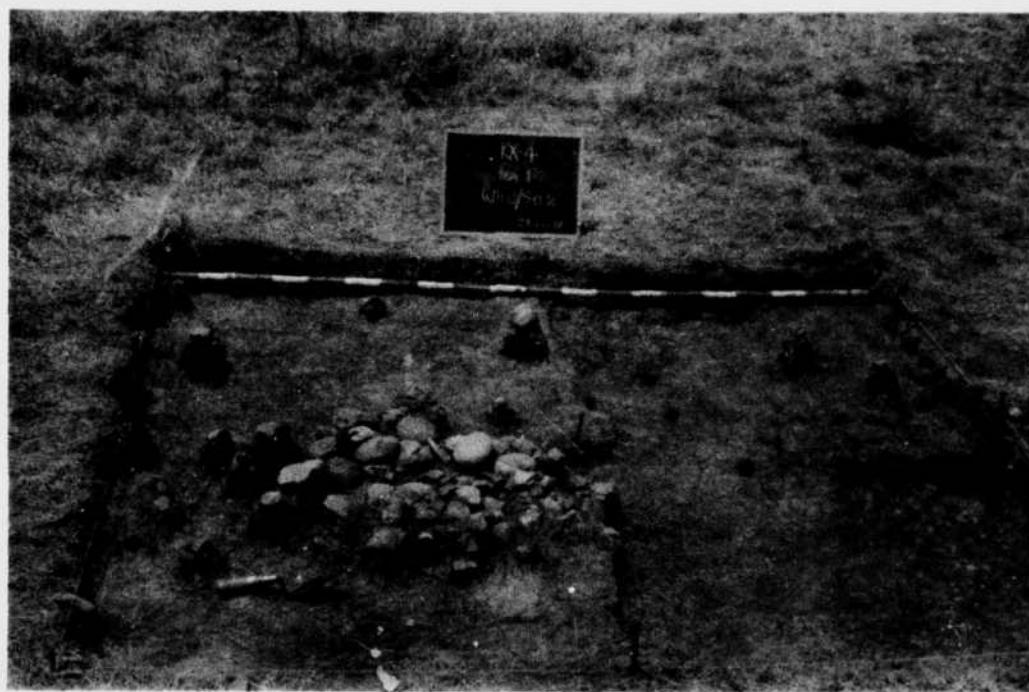


Figure 25. Looking west across Feature 1 at Site 41KX4.

scattered around the cluster. Composition of the stone in the cluster was mainly quartzite (~78%), with very little Potter chert (~16%) and unidentified stone (~6%). A few flakes of silicified wood occurred along the northern edge of the cluster. A piece of charred wood, 29 cm in length, was located at S1.92/W11.56 in a vertical position. The wood was collected, but examination indicates that it probably is a burned mesquite or juniper root not associated with the feature. No burned soil or charcoal was found mixed among the stones in the cluster.

The center of Feature 2 is near Point N6.5/E6.5, and the cluster has a diameter of approximately 1 m. The lithic material is mainly quartzite, but the cluster has a higher percentage of Potter chert than Feature 1. This feature was exposed and scattered by erosion and was not tested.

Collections: 1972 - 64 specimens: 1 blank, complete; 1 turtle-back, unifacial; 2 flakes with unifacially chipped edge, straight to convex; 3 flakes with unifacially chipped edge, concave; 1

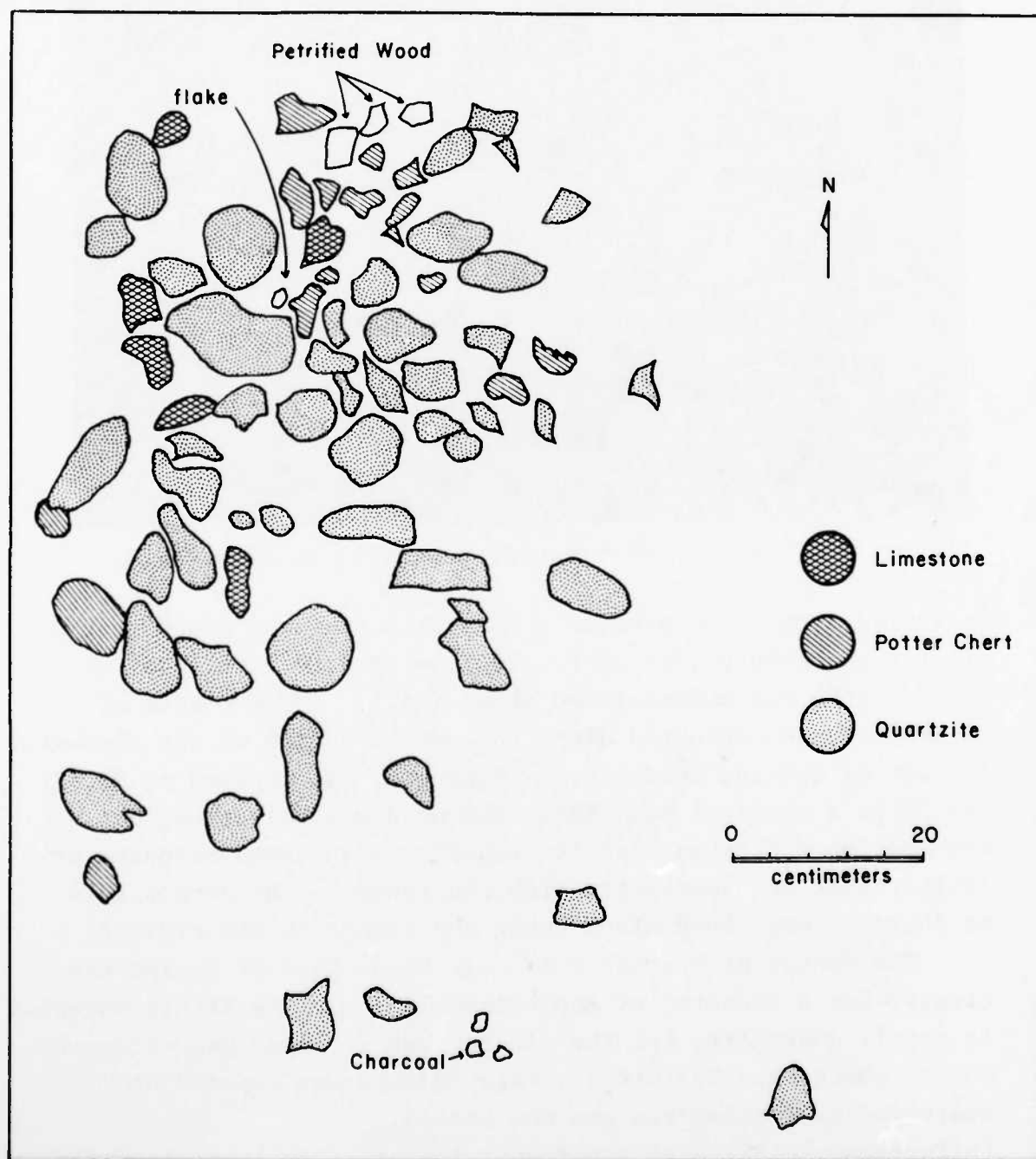


Figure 26. Plan of Feature 1 at Site 41KX4.

chopper, bifacial, complete; 2 cores; 19 flakes, cortex, unworked; 35 rocks, burned (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 457 specimens: 1 chopper, bifacial; 1 chopper, unifacial; 4 chipped pebbles, bifacial; 10 chipped pebbles, unifacial; 1 spokeshave; 1 denticulate; 2 scrapers, flake; 6 retouched flakes; 2 hammers, pebble; 2 hammers, edge fragments; 1 mano, unifacial; 1 mano, unidentified fragment; 4 pebbles, tested; 33 flakes, cortex, unworked; 5 flakes, non-cortex, unworked; 370 rocks, burned; 1 bone, unworked, tooth fragment; 1 sample, charcoal; 11 samples, soil.

Analysis: Hammers and debitage make up 65.05 percent of the inventory, excluding burned rock, bone, soil, and charcoal samples. Scraping tools are 7.77 percent; chopping tools are 16.50 percent; grinding implements are 1.94 percent; and other classes are 8.74 percent. Two classes which are conspicuously absent are knives and gouges. Of the entire inventory, burned rock makes up 79.72 percent.

An analysis of the horizontal distribution of the lithic artifacts shows no clustering of any items except burned rock. It is not clear whether these clusters of fire-cracked rock were actually hearths or merely boiling pebble dumps. It has been suggested for sites nearer the Caprock that some clusters of burned Potter chert and quartzite cobbles were boiling pebble dumps (Etchieson et al 1977:31; Hughes and Hood 1976: 18-66). The lack of any associated burned earth and/or charcoal with the undisturbed cluster (Feature 1) makes a boiling pebble dump seem more plausible than a hearth (see discussion for Site 41KX5). No feature identifiable as a hearth was located at the site.

Hughes and Hood (1976:18-66) report the testing of similar burned rock clusters at the Bitter Creek Site in Hall County. Their testing of 12 of the 18 concentrations revealed no associated burned earth or charcoal. No hearth areas containing

burned earth, charcoal, or ash were found. Preferences of quartzite over Potter chert and vice versa were noted in several of the clusters. The possibility that these clusters at Bitter Creek were boiling pebble dumps is suggested.

Quartzite (51.35%) is the most common burned rock material at Site 41KX4, although Potter chert (44.59%) is also abundant. Other burned materials are purple quartzite (0.27%), silicified wood (1.35%), and unidentified stone (2.43%).

No exotic lithic materials were found on Site 41KX4. Lithic materials which do occur are milky quartz (2.70%), Potter chert (51.35%), purple quartzite (1.35%), silicified wood (5.41%), quartzite (20.27%), and unidentified stone (18.92%). Potter chert, quartzite, and unidentified stone are high in frequency, while purple quartzite and silicified wood are low.

Soil samples were submitted to Texas A&M University for pollen analysis. Preliminary chemical analysis indicated that pollen could not be recovered in large enough quantities to make the recovery worthwhile.

Interpretations: Site 41KX4 may have been a specialized wild plant food processing station utilizing boiling pebbles. It probably was occupied only briefly, although perhaps repeatedly. The site was utilized by an unknown prehistoric group, probably at some time during the Archaic Stage.

Site 41KX5

Location: The site is located on a Pleistocene rim near the Corps of Engineers survey marker PL 82+11.61. It is just north of the presently proposed dam axis (Fig. 10). The site is near the north end of a long narrow alluvial flat on the east rim of the Bluff Creek valley.

Observations: The site is situated on the highest part of this end of the alluvial flat. The main part of the site is near the eastern edge of the flat, overlooking the breaks of a small tributary valley draining northward toward the North Wichita

River. The site has a good grass cover, and the juniper cover is also heavy. From the high point, small spurs extend downward to the northeast and southeast. The main part of the flat extends on to the north and downward for several hundred meters. The spurs and the extension to the north are capped with gravels.

Artifacts and burned rock are concentrated on the high point of the site. Artifactual material decreases rapidly to the west, but continues lightly scattered to the north and east on the gravelly spurs. A thin mantle of gravels is also found across the eroded Permian slopes to the east and south of the site. Occasional lithic artifacts are found in the gravels.

Five clusters of burned rock were located. One was in the main part of the site (Feature 1), one was on each of the two spurs to the northeast (Feature 2) and southeast (Feature 5) from the main site, and the remaining two (Features 3 & 4) were to the west of the main site along an eroded slope.

Investigations: A grid center was set out near the southwestern corner of the main lithic concentration. Base lines were laid out to the north, east, and south. An area of about 357 square meters was surface collected by 1 m squares. The locations of a few isolated items outside this area were plotted on the base map for the site. Directions and distances to Features 2-5 were also recorded.

Twenty-seven 1 m squares were opened on the site. Figure 27 shows the locations of these squares. Most were excavated to a depth of 20 cm. Squares N6-7/E14-15 and S1-2/E11-12 were dug to a depth of 30 cm. Squares covering the area of S1-3/E8-9 and S0-2/E9-12 were cleared to expose Feature 1. No other features were revealed by the testing procedures.

Squares were excavated in 10 cm levels. Collections from each level were bagged separately. Excavations were conducted with troweling and shovel shaving techniques. All dirt was

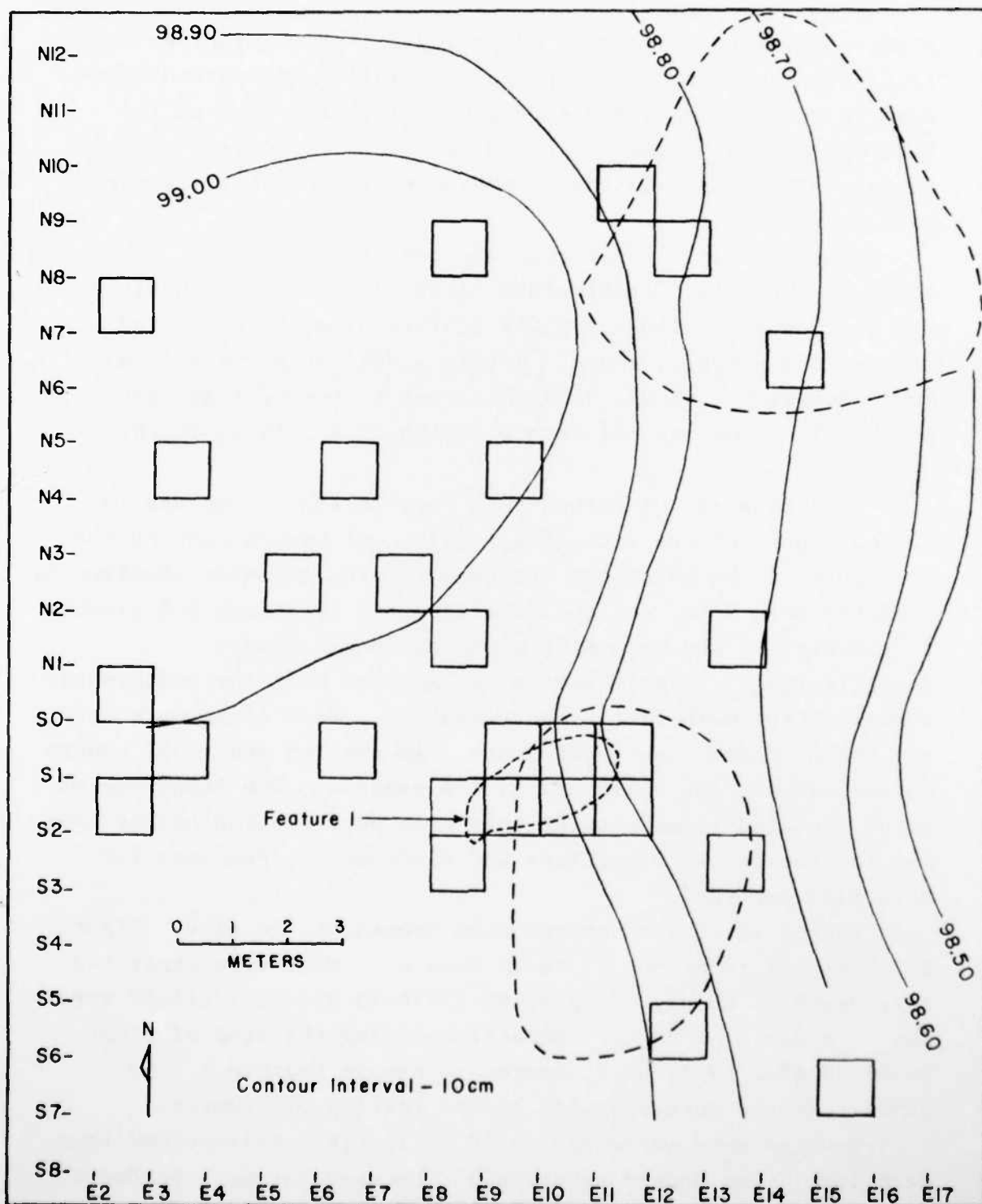


Figure 27. Map showing excavated squares and artifact concentrations at Site 41KX5. Datum is at grid center off map to west.

passed through 1/4 inch hardware cloth. Soil samples were collected in most levels of most squares.

Deposits: The rim along the east side of the Bluff Creek valley is surmounted by a few meters of reddish-brown sands and gravels which are probably of Pleistocene age. The site is located in the upper part of this deposit. To the west of the main site and along the eroded slopes, Schultz (1972: V-28) reports finding Pleistocene fossil tooth and bone fragments. Local occurrences of snails are also reported.

Gravel blankets the northern part of the alluvial flat, the northeastern and southeastern spurs, and the eroded slopes in all directions from the site. From the numerous unworked flakes and core-like specimens found in the gravels, and from the similarities in composition of artifacts and gravels, it is obvious that these outcrops were heavily utilized as a lithic resource. Below these Pleistocene deposits are the eroded shales of the Permian redbeds.

On a pavement of gravel on the Permian redbeds in the valley to the south of the site, two 1 m squares were staked out and all gravel in each square was collected for analysis. The results are presented by Hood in Appendix III. The kinds and quantities of the materials in the gravels may be compared with those of the artifacts in the project area.

The test pits were placed in the upper 30 cm of the reddish-brown deposits. The soil was sandy to silty and very compact. Three soil samples were submitted for grain-size analysis. The results are reported (Sample Nos. 3-5) in Appendix I by Taylor. Sample No. 3 (KX5.62, S1-2/E11-12, 10-20 cm) appears to be a reworked fluvial sand. The high amounts of fine particles in the sample are probably due to weathering and aeolian sand contaminating the sample after it was deposited. Sample No. 4 (KX5.63, S1-2/E11-12, 20-30 cm) is interpreted as a reworked fluvial sand that has had aeolian sands introduced after deposition. Sample No. 5 (KX5.64, S1-2/E11-12, 0-10 cm)

is interpreted as a reworked fluvial sand with aeolian sand contamination.

Features: Five clusters of burned rock were recorded at the site. These are in various states of preservation.

Feature 1 (Fig. 28) is located on the main part of the site. It is found within grid squares S1-3/E8-9 and S0-2/E9-12. A small fraction of this feature was exposed prior to excavation. The main cluster measures about 1.1 m by 1.6 m by about 10 cm in depth. Quite a few fire-cracked rocks are scattered downslope from the main concentration. This concentration has two small tight clusters perhaps representing two boiling pebble dumps. The composition of the burned rock is largely Potter chert, with smaller amounts of quartzite and silicified wood. No burned earth, charcoal, or ash was located within the cluster.

Feature 2 is located on the northeastern spur about 86 m to the northeast from grid center. This feature is approximately .75 m in diameter. It is situated within the mantle of gravel, and some burned rock is scattered downslope from the main cluster. This cluster is composed mainly of Potter chert, with small amounts of quartzite and silicified wood. This cluster should not be affected by construction and was not cleared.

Features 3 and 4 are about 75 m to the west from grid center (Fig. 29). They are the scattered remains of clusters eroding from a slope on the western edge of the site near a ranch road. Lithic materials are mainly Potter chert with some quartzite. Because of their eroded condition, these features were not tested.

Feature 5 is located on the southeastern spur about 70 m to the southeast of grid center. Like Feature 2, it is within the mantle of gravel. The cluster measures about 1 m in diameter. It consists almost entirely of Potter chert with small amounts of quartzite. This feature should not be disturbed by construction activities and was not cleared.

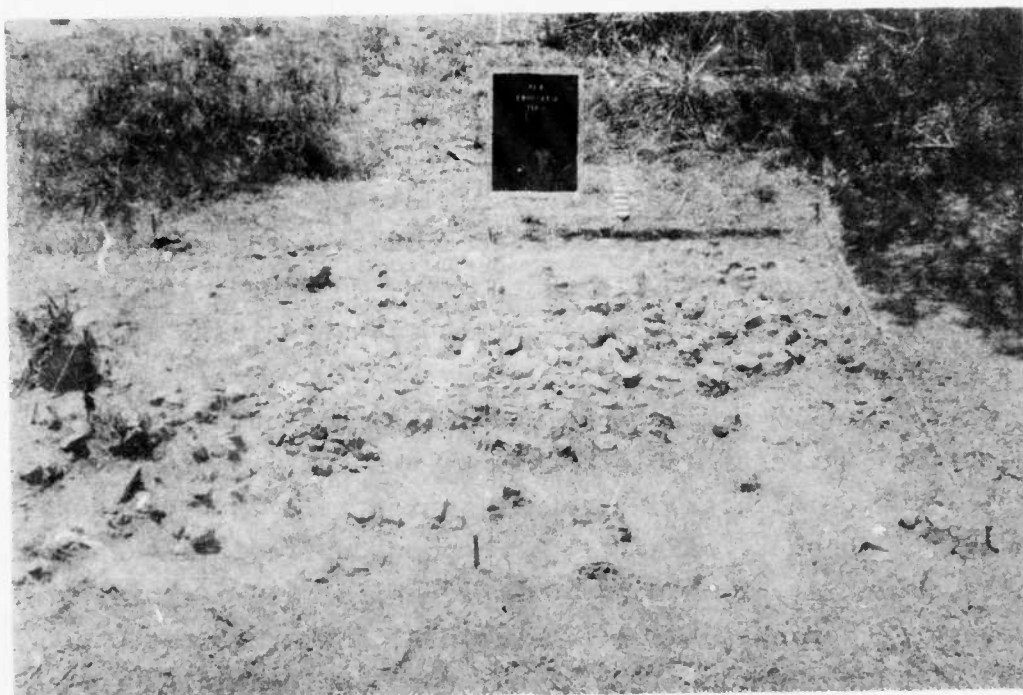


Figure 28. Looking south across Feature 1 at Site 41KX5.

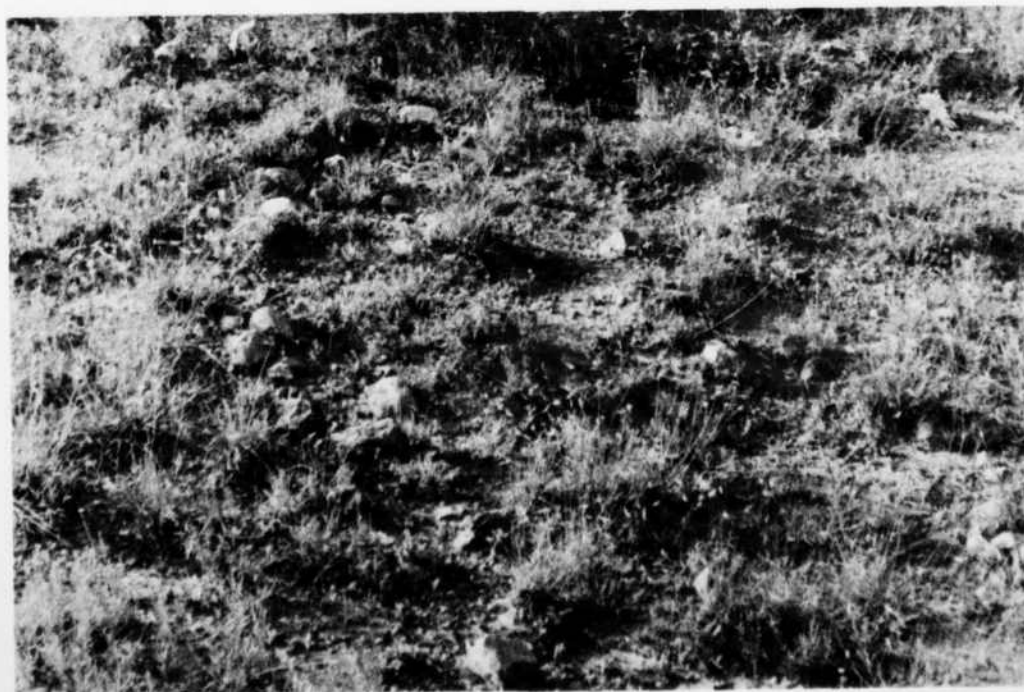


Figure 29. Looking east across Feature 3 at Site 41KX5.

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WEST TEXAS STATE UNIV CANYON ARCHEOLOGICAL RESEARCH LAB F/G 5/6
ARCHEOLOGICAL INVESTIGATIONS IN THE TRUSCOTT RESERVOIR AREA. KI--ETC(U)
JUN 78 G M ETCHIESON, R D SPEER, J T HUGHES DACW56-77-C-0110

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Collections: 1972 - 87 specimens: 1 dartpoint, unidentifiable fragment; 3 dartpoints or knives; tip fragments; 2 blanks, end fragments; 2 end gravers, single; 3 flakes with unifacially chipped edge, straight to convex; 3 flakes with unifacially chipped edge, concave; 2 silicified wood tablets, end chipped unifacially; 2 cores; 40 flakes, cortex, unworked; 16 flakes, non-cortex, unworked; 13 rocks, burned (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 2150 specimens: 1 dartpoint, Desmuke; 1 dartpoint, unidentifiable fragment; 6 knives; 5 crude bifaces; 1 gouge, bifacial; 3 gouges, unifacial; 2 turtlebacks, bifacial; 1 chopper, bifacial; 1 chopper, unifacial; 4 chipped pebbles, bifacial; 2 chipped pebbles, unifacial; 5 spokeshaves; 4 gravers; 2 scrapers, end; 12 scrapers, flake; 43 retouched flakes; 1 mano, unifacial; 1 stone, worn, unidentified fragment; 6 cores; 1 pebble, tested; 229 flakes, cortex, unworked; 226 flakes, non-cortex, unworked; 1567 rocks, burned; 3 samples, charcoal/wood; 23 samples, soil.

Analysis: Excluding charcoal and soil samples, and burned rock, debitage constitutes 82.41 percent of the inventory. It is worth noting that no hammers were found on the site. Cutting and scraping tools are 5.55 percent; chopping tools are 1.27 percent; grinding implements are 0.16 percent; and other tool classes are 10.61 percent.

Analysis of the horizontal distribution of the artifacts reveals two main areas of concentration. These are outlined in Figure 27. The larger concentration is found at the northeastern edge of the site. In size it is about 8 m north-south by about 9 m east-west. Items recovered include 3 knives, 2 crude bifaces, 1 mano, and numerous unworked flakes and burned rocks.

The second concentration includes Feature 1. The feature seems to be along the northwest edge of the concentration.

Specimens are scattered to the south and east from the feature. Collections from this concentration include a knife and numerous unworked flakes and burned rocks.

Analysis of the vertical distribution of the artifacts roughly agrees with the two concentrations suggested above. Fourteen of the 27 squares excavated have collections from the 0-10 cm level, 7 have collections from the 10-20 cm level, and 1 has a collection from the 20-30 cm level.

Two exotic lithic materials occur at the site: Edwards flint (0.72%) and Tecovas jasper (0.54%). The remaining lithic materials, from local sources, are milky quartz (1.08%), Potter chert (57.63%), purple quartzite (0.18%), silicified wood (27.29%), quartzite (1.97%), and unidentified stone (10.59%). There is a definite bias against quartzite in burned rock, and this same bias shows up in lithic tools and debitage. Purple quartzite is almost nonexistent on the site, and other quartzites are 87.66 percent lower than expected. Silicified wood is 68.16 percent higher than expected, and Potter chert is 16.28 percent higher. For some reason silicified wood was a more preferred lithic material at this site than at most of the others.

The most abundant artifact class at Site 41KX5 is fire-cracked rock. Materials of burned rock are Potter chert (82.96%), purple quartzite (0.06%), silicified wood (0.19%), quartzite (15.76%), and unidentified stone (1.02%).

Features 2 and 5 are relatively undisturbed burned rock clusters and are superficially similar to Feature 1. Feature 1 at this site resembles Feature 1 at Site 41KX4 in that no burned earth, charcoal, or ash was located in the features. A basic difference between this site and 41KX4 is the dominance of Potter chert over quartzite. The dominance is so strong that there can be little doubt that some individuals had definite preferences. Such is also the case at the Bitter Creek Site (Hughes and Hood 1976:36). Quartzite pebbles of the right size

for boiling stones are much more common in the local gravels than Potter chert, but at Site 41KX5 Potter chert was singled out.

Is there some cultural significance to the selection of Potter chert over quartzite or vice versa? Why use Potter chert for boiling stones when the quartzites are much more abundant and available? Does one material retain heat longer than the other, or make better boiling stones for some other reason? Some controlled experiments need to be conducted with Potter chert and quartzite to check out the possible differences in heat retention and rock fragmentation. Does one or the other material break up more readily, so that more stones are required for the same amount of boiling? Such experiments have been conducted with various kinds of stone from the Cache River/Crowley's Ridge areas in Arkansas (House and Smith 1975:75-80).

Another consideration which should be taken into account is the availability in each gravel source of these two lithic materials. Was Potter chert preferred and quartzite used only when Potter chert was scarce or non-existent? At Site 41KX5, Potter chert was intentionally selected from the gravels.

If choice was non-random, but based more on functional efficiency and local availability than on cultural bias, then which material was used may have little or no culture-historical significance.

Soil samples were submitted to Texas A&M University for pollen analysis. Preliminary chemical analysis indicated that not enough pollen could be recovered to justify further analysis. Interpretations: The presence of knives and end scrapers may indicate an occupation during one of the later Archaic substages. The gouges may also indicate an occupation during an earlier substage. The abundance of boiling stone fragments suggests a specialized processing site. The site is also in a good position for the inhabitants to utilize the abundance of local gravels. It is suggested that the site was repeatedly occupied

during the Archaic Stage as a camp for processing wild plant foods and collecting supplies of lithic materials.

Site 4lKX6

Location: The site is located on the north side of a northward bend of North Prong Creek about 125-150 m before it runs into Bluff Creek (Fig. 10). It is within the proposed reservoir pool on a Quaternary terrace (Fig. 30).

Observations: A light scatter of chipped stone was observed over an area of about 100 m northwest to southeast by 45 m southwest to northeast. In addition to the lithic scatter, 12 probable hearths were found.

The northern part of the site has a heavy grass cover. No large brush is left on the site except along the banks of North Prong Creek. This brush includes salt cedar and wild plums. The site has been thoroughly disturbed by brush grubbing. The lower slopes along the creek channel are eroded and bare.

Investigations: An east-west base line was laid out along the northern part of the site as an aid in mapping features and artifacts from the site. All of the artifact locations were plotted on the site map. The 12 hearths were also plotted. The hearths were cleared by troweling. All had been thoroughly disturbed.

Deposits: The site is situated on a high alluvial terrace along the north side of North Prong Creek about 125-150 m north of its junction with Bluff Creek. The terrace deposits consist of a few meters of Quaternary alluvium, probably late Pleistocene to Recent in age. The deposits revealed by testing are compact brown silty sands. This alluvium may directly overlie the Permian redbeds, although the redbeds are not exposed near the site. High bluffs of Permian sandstones and shales occur along Bluff Creek a few hundred meters to the south.



Figure 30. Looking east across a Quaternary terrace site, 41KX6.

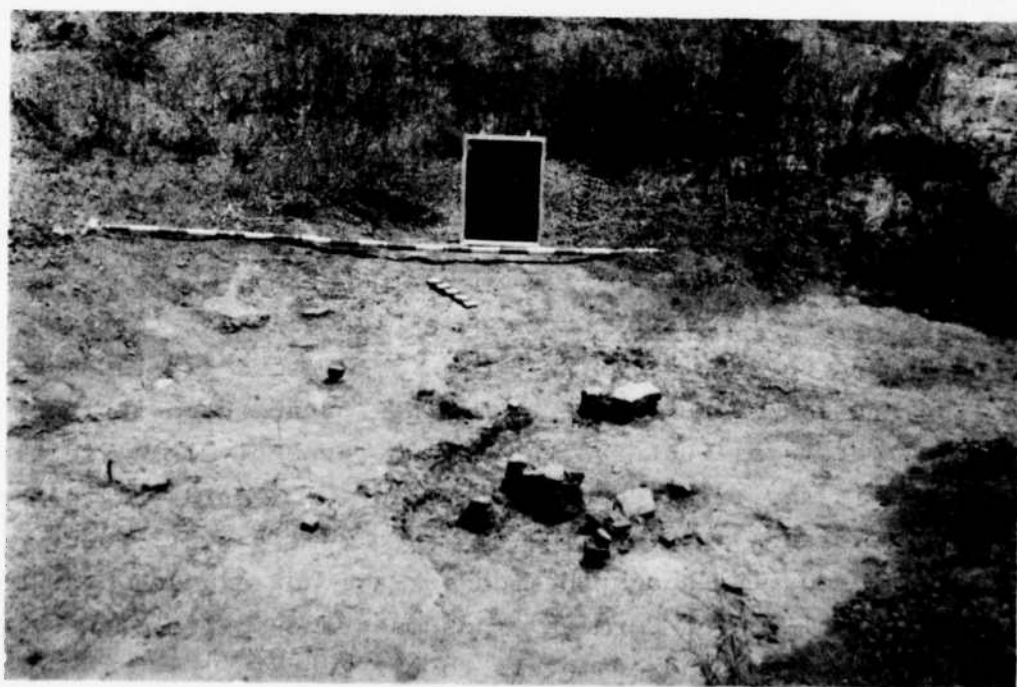


Figure 31. Looking northeast across Feature 2 at Site 41KX6.

Features: Twelve clusters of seemingly burned sandstone slab fragments probably representing hearths were located on the site. Sandstone slabs do not occur naturally in the alluvial deposits. These clusters ranged from about 0.75 m to about 4 m in diameter. As each cluster was cleared the stones were plotted on maps. After clearing, it was evident that each hearth had been extensively disturbed (Fig. 31). Any pattern observed can be directly attributed to the recent brush grubbing activities at the site. No burned earth was located. A few small fragments of charcoal were found scattered about the surface unassociated with any feature. The charcoal may also result from the brush clearing work.

Collections: 1972 - 106 specimens: 1 dartpoint, Abasolo; 1 dartpoint, Fairland; 1 dartpoint, cf. Refugio; 1 knife, triangular; 2 blanks, complete; 1 gouge, bifacial, medial fragment; 4 scrapers, end, plain; 1 scraper, end, bit fragment; 1 end graver, single; 1 corner graver, single; 2 choppers, bifacial, complete; 1 chopper, unifacial, complete; 2 grinding slabs, bi-concave wear, fragments; 2 cores; 37 flakes, cortex, unworked; 42 flakes, non-cortex, unworked; 3 rocks, burned; 3 shells, mussel, fragments (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 96 specimens: 2 knives; 1 gouge, unifacial; 1 chopper, bifacial; 1 chipped pebble, unifacial; 2 scrapers, flake; 3 retouched flakes; 2 hammers, edge fragments; 12 flakes, cortex, unworked; 21 flakes, non-cortex, unworked; 45 rocks, burned; 1 bone, fragment, tooth enamel; 4 samples, charcoal; 1 sample, soil.

Analysis: From an examination of the lists of collections, it is obvious that a larger variety of artifacts were located in 1972 than in 1977. Excluding charcoal and soil samples and burned rock, hammers and debitage are 80 percent of the inventory; cutting and scraping tools are 8.28 percent; chopping

tools are 3.45 percent; grinding implements are 1.38 percent; and other classes are 6.89 percent. Of the inventory, 2.07 percent are dartpoints and 3.45 percent are end scrapers.

Analysis of the horizontal distribution of the 1977 collections does not indicate any work areas. Considering the disturbance of the site and the sparsity of the collections, this is not surprising. The distribution of the disturbed hearths suggests most occupation in the southeastern portion of the site (Fig. 32), but some hearths throughout the site may have been destroyed.

The lithic materials of both the 1972 and 1977 collections are considered here. Two exotic lithic materials are found at the site, both in unusually high percentages. These are Edwards flint (31.82%) and Tecovas jasper (7.35%). The local materials are Potter chert (35.71%), purple quartzite (1.30%), sandstone (1.30%), silicified wood (8.45%), quartzite (7.35%), and unidentified stone (7.35%).

Burned rock collected at the site is mostly sandstone (71.11%). Also included are Potter chert (13.33%), quartzite (11.11%), and unidentified stone (4.44%).

Three dartpoint types found at Site 41KX6 during the 1972 work are different from types found anywhere during 1977, and therefore are not described in the collections section of this report. These point types are Abasolo, Fairland, and Refugio. Suhm and Jelks (1962:165) suggest that Abasolo points may date from about 5000-3000 B.C. until about 500 A.D. Weir (1976a) and Patterson (1977) assign the Fairland type to the Twin Sisters Phase in central Texas. Suhm and Jelks (1962:241) say that the Refugio type is "found widely in the central coastal area, southwestern, central, and northcentral areas, and the lower Pecos River." A suggested date is 2000 B.D. to 1000 A.D.

Interpretations: The Refugio and Fairland points suggest occupations during the Middle and Terminal substages of the Archaic Stage. Both the high percentage of Edwards flint and the presence

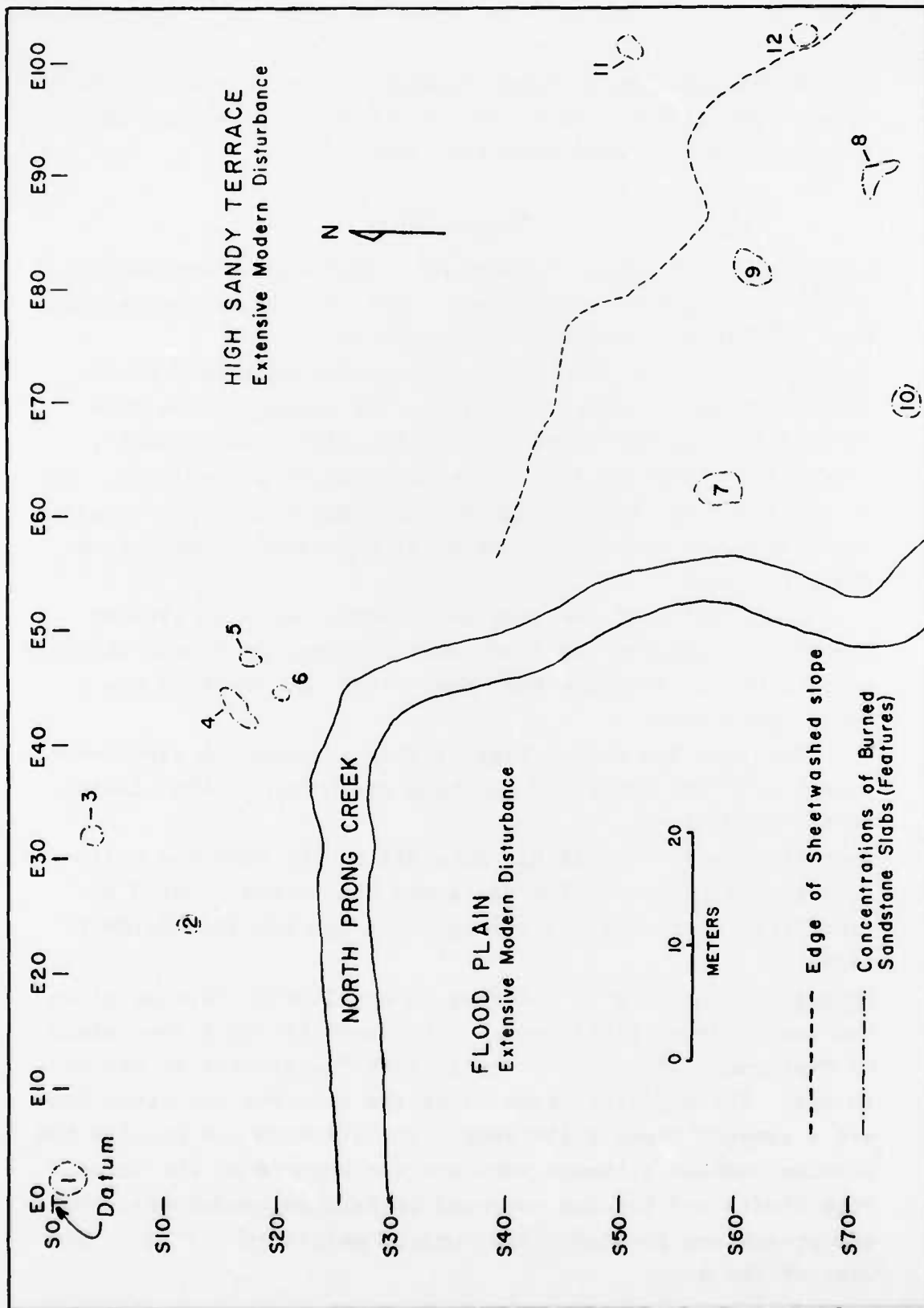


Figure 32. Map indicating concentrations of burned sandstone slabs at Site 4LKX6.

of central Texas point types suggest a close tie with central Texas. The site may have been used briefly as a camp from time to time by groups from that area.

Site 41KX33

Location: The site is located on a high Quaternary terrace on the east bank of Bluff Creek. The site is on the Antelope Flat Road (Fig. 10) in the reservoir pool.

Observations: The site is on the outside of a bend in the channel of Bluff Creek (Fig. 33). The Antelope Flat Road crosses and has destroyed most of the site. It is small, measuring only about 30 m north-south by 10 m east-west. It is possible that Bluff Creek has cut away some of the western part, although no cultural material was found eroding from the creek bank.

The portion of the site under fence has been grubbed. The portion between the fence and the creek is almost entirely covered by the Antelope Flat Road. Part of the site has a heavy grass cover.

The site has only a light lithic scatter. A sandstone hearth near the north end had been disturbed by the blading of the road ditch.

Investigations: The lithic material on the site was collected in a general manner. The sandstone hearth was cleared by troweling. All dirt was screened through 1/4 inch hardware cloth.

Deposits: The site is situated on an alluvial terrace along the east side of Bluff Creek. The deposits are a few meters of Quaternary alluvium, probably late Pleistocene to Recent in age. The deposits revealed by the road cut and creek bank are a compact brown silty sand. The alluvium may overlies the Permian redbeds although they are not exposed at the site. High bluffs and benches composed of Permian sandstones, shales, and gypsum are located a few hundred meters to both east and west of the site.

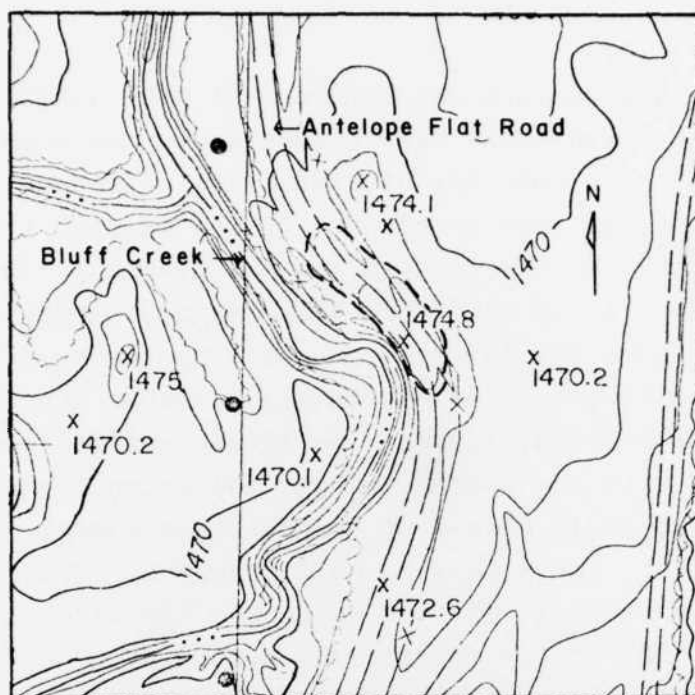


Figure 33. Topographic map of Site 41KX33.

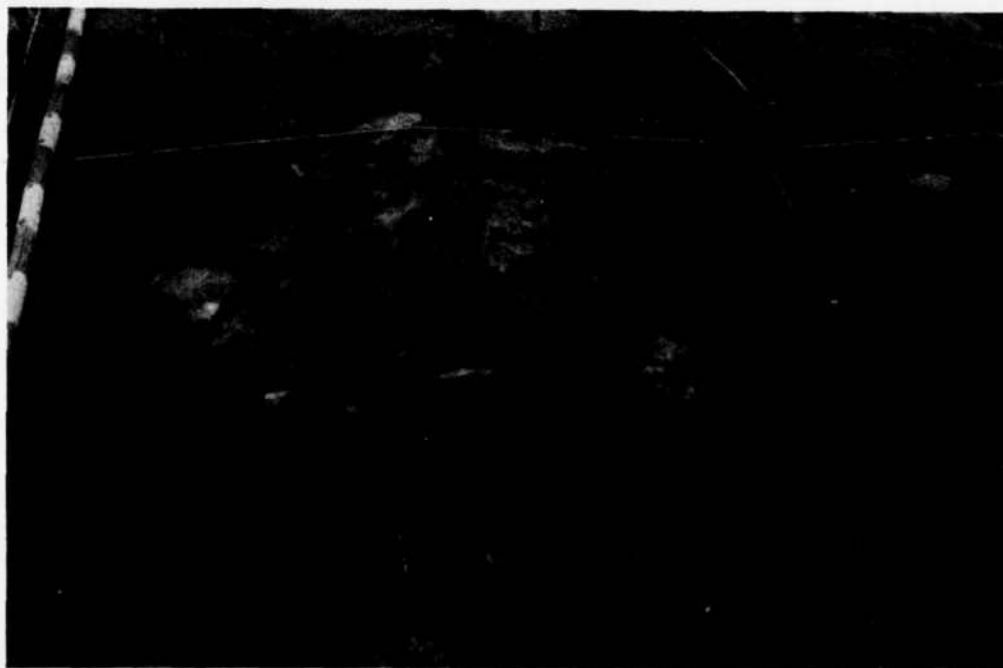


Figure 34. Looking east across sandstone hearth at Site 41KX33.

Features: One feature was recorded at Site 4lKX33. This is the disturbed sandstone hearth exposed in the road ditch (Fig. 34). The hearth consists of flat-lying sandstone slabs. No basin of any sort was detected. If any existed it may have been destroyed by the road work. The hearth is about 0.75 m in diameter. A few sandstone slab fragments were found scattered away from the feature, probably by the road blader.

The soil within the hearth was somewhat ashy and contained a few small charcoal flecks. No lithic artifacts were found associated with the hearth. Items collected from the hearth include four small pieces of burned tooth enamel, a small bone fragment, and a mussel shell fragment. The bone and shell fragments apparently did not reach the laboratory. No charcoal suitable for C-14 dating was recovered.

Collections: 15 specimens: 2 flakes, cortex, unworked; 3 flakes, non-cortex, unworked; 6 rocks, burned; 4 bone, fragments, tooth enamel.

Analysis: Only five lithic specimens were found at the site and all are unworked flakes. Of these five flakes, four are Edwards flint and one is Potter chert. The presence of tooth enamel, bone, and mussel shell in the hearth indicate preparation of meat foods. Except for one piece of Potter chert, all of the burned rock is sandstone.

Interpretations: The site appears to be a camp briefly occupied by a small prehistoric group of unknown cultural affiliation. The Edwards flint suggests central Texas connections.

Site 4lKX34

Location: Located west of the Antelope Flat Road and near Site 4lKX35, this site is on a Permian bench-bluff within the proposed reservoir pool (Fig. 10).

Observations: An alluvial remnant is located near the center of the site and another is at the western edge (Fig. 35).

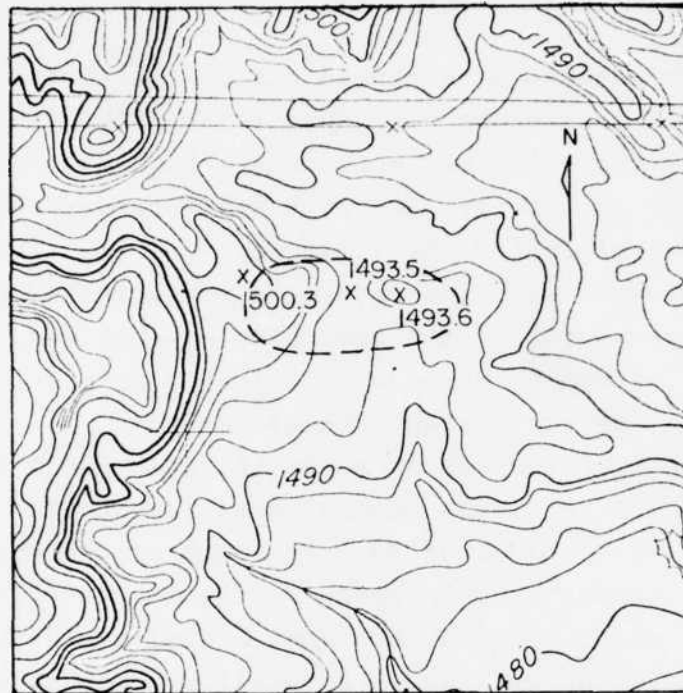


Figure 35. Topographic map of Site 41KX34.

The remainder of the site is sheetwashed bedrock. Grass densely covers the alluvial areas. A light juniper cover is present on the site. The eroded bedrock areas are bare.

An eastward draining wash heads within the scarp to the west and runs along the north edge of the site. The wash carries water only during heavy rains.

Lithic artifacts were found lightly scattered across the weathered bedrock. If any were present on the alluvial remnants, they were concealed by the grass cover. Several small bone fragments were found eroding from the alluvium at the west edge of the site. Artifacts were found over an area of about 85 m east-west by 50 m north-south.

Investigations: A grid center was established on the central alluvial remnant and base lines were extended to the east and west. Locations of all artifacts found on the eroded bedrock were plotted on a base map.

Ten 1 m squares were staked out on the central alluvial patch and one square was placed where the bone fragments were eroding from the alluvium to the west (Fig. 36). Each square was dug in 10 cm levels. All dirt was screened through 1/4 inch hardware cloth for the first few squares. This proved to be an unrewarding, time-consuming project, and only dirt from the upper level of the remaining squares was screened. Deposits: The two main kinds of deposits at Site 41KX34 are the alluvium and the weathered bedrock.

The alluvium is present as an isolated patch near the center of the site. This remnant measures about 44 m in length east-west and about 30 m in width at the eastern end. It tapers to about 12 m in width at the western end. Depth varies from about 20 cm at the east end of the deposit to about 50 cm at the west end. Some alluvium is also found directly beneath the bluffs about 22 m west of the isolated patch.

The alluvial patches seem to be the remnants of an alluvial fan which began to form as the wash began to cut into the scarp. As the cut grew larger, the wash shifted to the north and began to erode the fan. The alluvial deposit slopes noticeably to the east from the scarp.

Stratigraphy within the deposit has alternating red and black zones (Fig. 37) that are traceable from square to square. The red zones probably represent periods of deposition and the black zones periods of non-deposition. During the periods of non-deposition, the alluvium probably was heavily vegetated and a thick zone of humus was formed. Two humic zones are evident, ranging from about 6 to 10 cm in thickness. The depositional zones are somewhat thicker.

Grain size analyses were run on six soil samples from Site 41KX34. All samples were considered invalid due to the high colloidal clay content (Taylor, Appendix I, Sample Nos. 6-11).

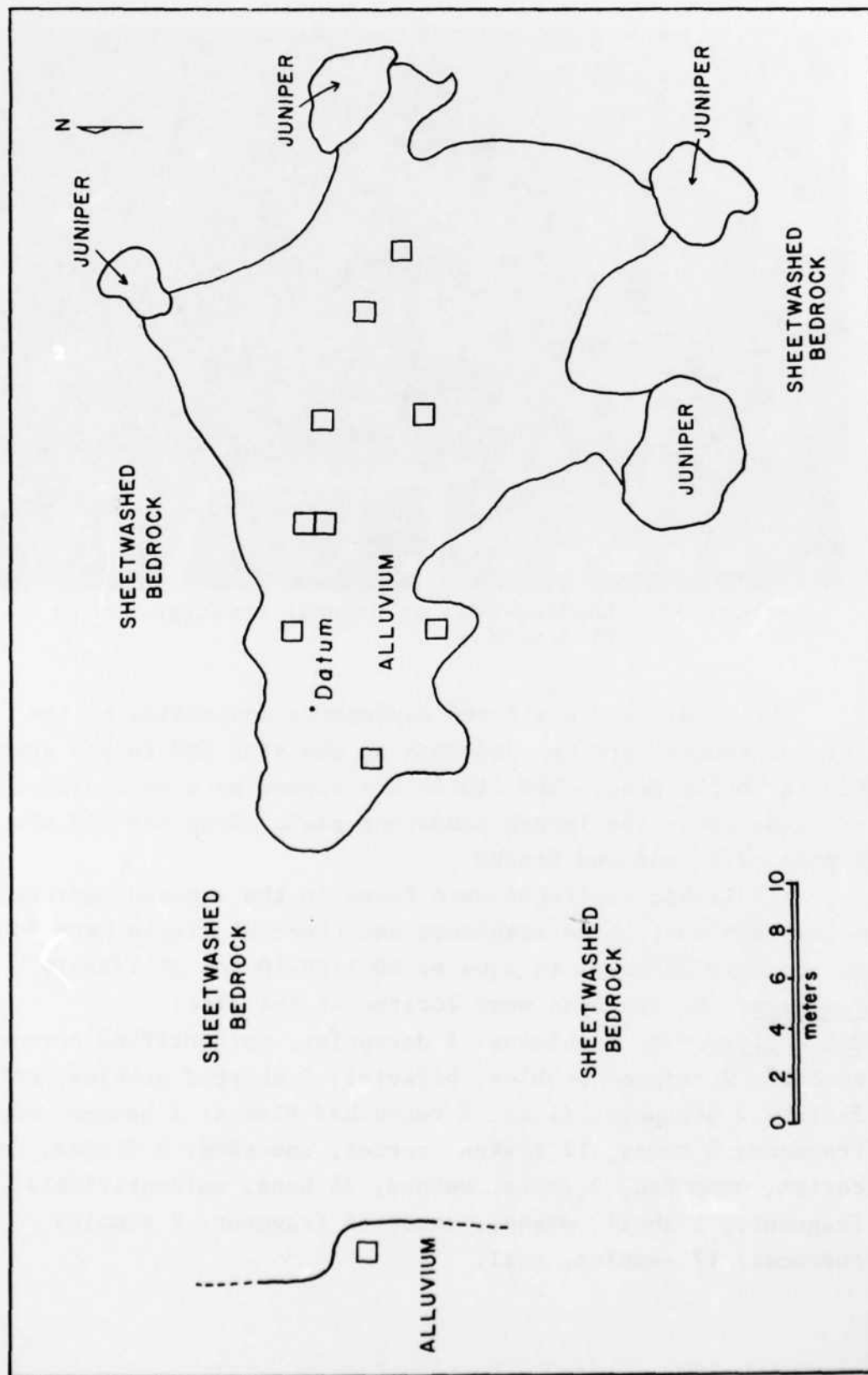


Figure 36. Map showing alluvial remnants and excavated squares at Site 41KX34.

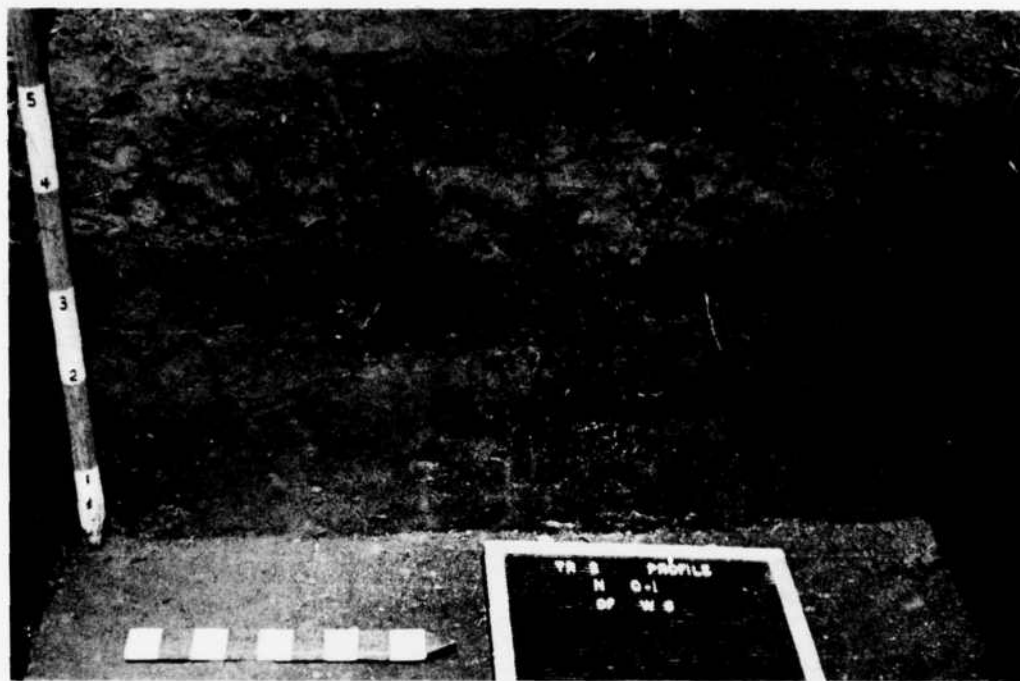


Figure 37. Looking west at natural stratigraphy at Site 41KX34.

The eroded and weathered sandstones and shales of the Permian redbeds are exposed both on the site and in the steep bluffs to the west. The bluffs are capped by a thick layer of sandstone. The larger sandstone slabs along the rim show ripple marks and mud cracks.

All lithic artifacts were found on the exposed bedrock. A few very small bone fragments and charcoal flecks were found in the 0-10 cm level in squares NO-1/E9-10 and SO-1/E9-10.

Features: No features were located at the site.

Collections: 87 specimens: 1 dartpoint, unidentified corner-notched; 2 chipped pebbles, bifacial; 2 chipped pebbles, unifacial; 2 scrapers, flake; 2 retouched flakes; 1 hammer, edge fragment; 3 cores; 12 flakes, cortex, unworked; 5 flakes, non-cortex, unworked; 3 rocks, burned; 34 bone, unidentifiable fragments; 1 shell, mussel, unworked fragment; 2 samples, charcoal; 17 samples, soil.

Analysis: Excluding samples and burned rock, only 30 artifacts were found, not enough for valid statistical analyses. Most of the specimens are unworked flakes. The tool assortment is small.

The bones found in Square S2-3/W31-32 are small, unburned fragments. No identification can be made and no feature can be inferred.

Exotic lithics found at the site are Alibates agate (6.67%) and Edwards flint (13.33%). Local materials are milky quartz (10.00%), Potter chert (20.00%), purple quartzite (20.00%), silicified wood (3.33%), quartzite (16.67%), and unidentified stone (10.00%).

Only three burned rocks came from the site. These are Potter chert (2) and quartzite (1).

Soil samples were submitted to Texas A&M University for pollen analysis, but results were negative.

A few small bone fragments were found near the surface of the alluvium in Square N1-S1/E9-10, suggesting occupation of the site toward the end of the deposition of the alluvial fan. No lithic artifacts, however, were found in the alluvium.

Interpretations: The small corner-notched dartpoint suggests a late Archaic occupation, possibly during the Terminal Substage. A small camp briefly occupied by a few people is indicated.

Site 41KX68

Location: The site is located along the south side of the Needmore Hill Road, approximately 180 m west of Bluff Creek (Fig. 10). It is within the proposed pool area.

Observations: The site is partially on an isolated remnant of Quaternary alluvium (Fig. 38). The rest of the site extends across weathered bedrock to the base of the bluffs to the south. The patch of alluvium is heavily overgrown with grass. Juniper is scattered over the eroded bedrock slopes to the south.

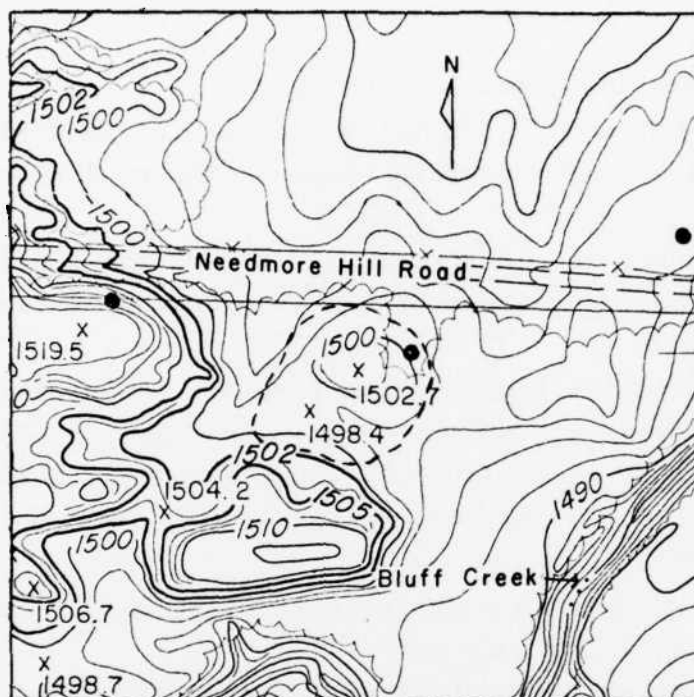


Figure 38. Topographic map of Site 41KX68.



Figure 39. Looking south across sandstone hearth at Site 41KX68.

The northern edge of the site has been cut by the Needmore Hill Road. An electric power pole has been placed on the eastern part of the site. These two modern disturbances did not damage the site to any great degree. The alluvial remnant has been severely sheetwashed, as has the rest of the site.

Lithics were scattered lightly across the alluvium, and also on the weathered bedrock to the south. A probable hearth of sandstone slabs was found eroding from the edge of the alluvial deposit.

Investigations: The hearth was cleared and the sandstone slabs were mapped, along with the few associated artifacts. All soil was screened. The lithic scatter at the site was general collected from two areas. The lithics on the alluvium were collected separately from those on the bedrock.

Deposits: Deposits at the site consist of an isolated patch of Quaternary alluvium situated on a weathered surface of Permian bedrock. The alluvium is sandy and very compact. It is about 40 cm in depth. The Permian bedrock is composed of shales and sandstones. Large sandstone slabs are strewn across the site below the bluffs.

Features: The sandstone hearth (Fig. 39) had been disturbed by erosion. It was eroding from the northwest edge of the alluvial remnant.

The hearth was composed of flat-lying sandstone slabs, occasionally three deep. One large slab (25 cm by 50 cm) was near the center of the feature. Smaller slabs were clustered in a random fashion around the larger. The cluster was somewhat scattered downslope on the southwest side (Fig. 40). The dimensions of the main concentration were about 70 cm by 90 cm. Sandstone slabs were scattered for about 1.5 m downslope to the southwest.

Artifacts associated with the hearth include a quartzite mano fragment and two unworked flakes. A few small charcoal flecks were also found within the burned rock cluster, but not enough for C-14 dating.

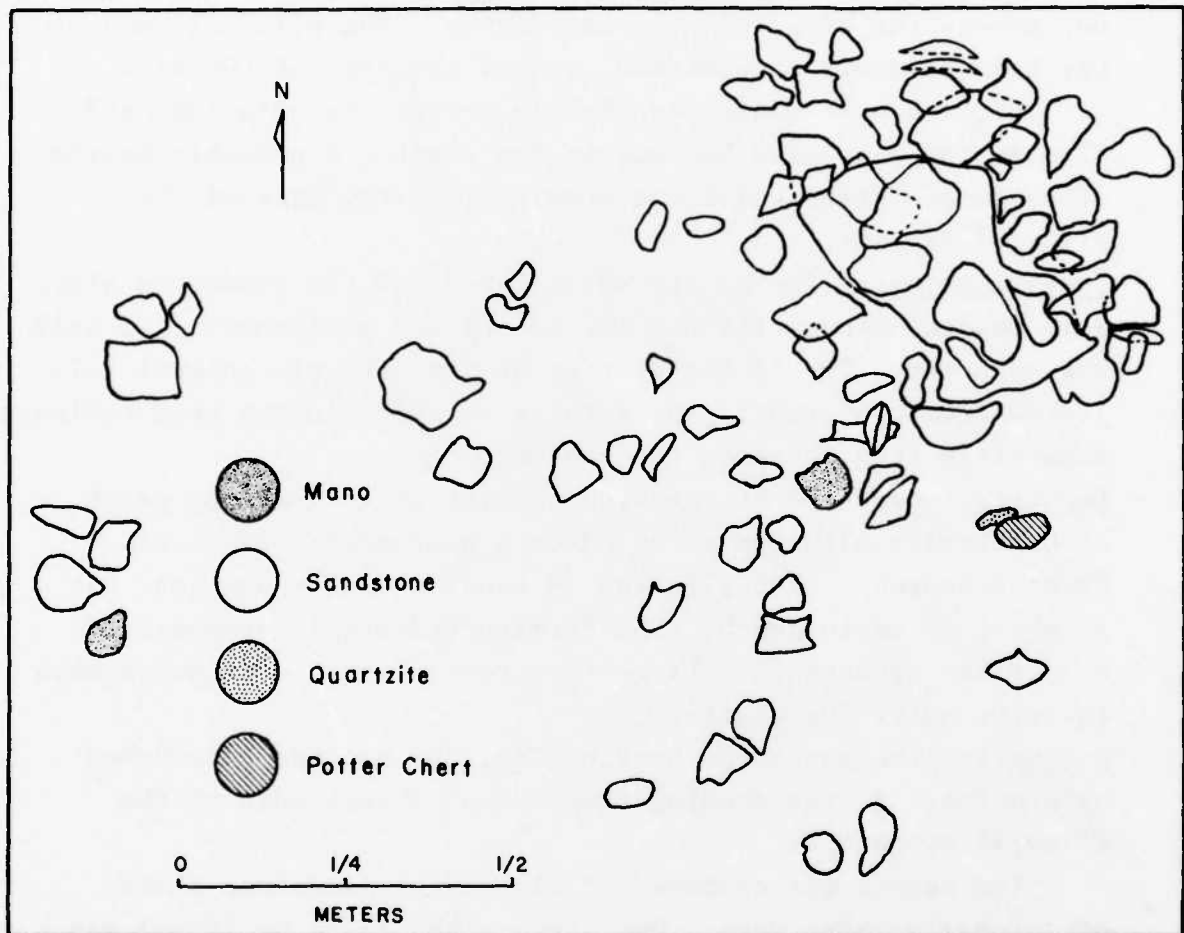


Figure 40. Plan of hearth at Site 41KX68.

Collections: 98 specimens: 1 arrowpoint, unidentifiable fragment; 1 dartpoint, unidentifiable fragment; 1 crude biface; 1 gouge, bifacial; 3 gouges, unifacial; 1 chopper, bifacial; 2 choppers, unifacial; 1 scraper, end; 2 scrapers, flake; 11 retouched flakes; 1 hammer, edge fragment; 1 mano, bifacial; 1 core; 1 pebble, tested; 26 flakes, cortex, unworked; 23 flakes, non-cortex, unworked; 19 rocks, burned; 1 sample, charcoal; 1 sample, soil.

Analysis: Excluding samples and burned rock, hammers and debitage are 66.23 percent of the inventory; cutting and scraping tools are 9.09 percent; chopping tools are 3.90 percent; grinding implements are 1.30 percent; and other classes are 19.48 percent. With so few specimens in each class, these percentages are not very meaningful.

An analysis of artifacts by collection area reveals that twice as many items were collected from the bedrock surface as from the alluvial surface. Items found on the bedrock and not on the alluvium include a tested pebble, a core, and a hammer edge fragment. Items found on the alluvium but not on the bedrock include a crude biface and an end scraper. The other five classes are represented in both areas. Of both gouges and unworked flakes, 75 percent are from the bedrock collection area. This suggests heavier utilization of the area near the bluffs than elsewhere, but the hearth is well away from the bluffs.

Exotic lithic materials from the site are Alibates agate (2.60%), Edwards flint (12.99%), and Tecovas jasper (3.90%). Lithics from local sources are Potter chert (41.56%), purple quartzite (5.19%), silicified wood (15.58%), quartzite (10.39%), and unidentified stone (7.79%). The percentage of exotic materials is very high (19.49%) compared with the expected percentage (5.10%). Unusually strong influences from both the northwest and the south are suggested.

Burned rock, other than the sandstone from the hearth, includes Potter chert (6), purple quartzite (1), and quartzite (2).

Interpretations: The presence of an arrowpoint and a dart-point indicate occupations during both the NeoIndian and Archaic stages. The gouges are additional evidence for possibly early Archaic occupation. Site 41KX68 seems to have been a camp of brief duration by small groups during both stages.

EXCAVATED AND HISTORIC SITES

Two historic sites were found in the Truscott Reservoir area, within or near the pool level. One of these (Site 41KX66) is a half-dugout which was completely excavated. The other (Site 41KX67) is a rock fence where no collecting or excavating was done. These sites are described below.

Site 41KX66

Location: The site is located on the west side of the Bluff Creek valley about midway between the Antelope Flat and Needmore Hill roads (Fig. 10). It is near the edge of the proposed reservoir pool at the foot of the bluffs (Fig. 41). The site was found by Mrs. Clara Brown of Truscott, who showed it to the 1977 archeological field crew.

Observations: The dugout is cut into a low ridge between two small eastward-draining washes. The ground surface is bare sheetwashed bedrock. There is no grass cover on the site but juniper is abundant. To the southeast of the dugout is an alluvial remnant with a heavy grass and juniper cover.

The two washes at the site run roughly parallel for about 10 m. At the east end of the small ridge they run together and the drainage spreads out, forming a small depositional flat before dropping off to the east. Bluff Creek, draining northward at this point, is approximately 212 m to the east.

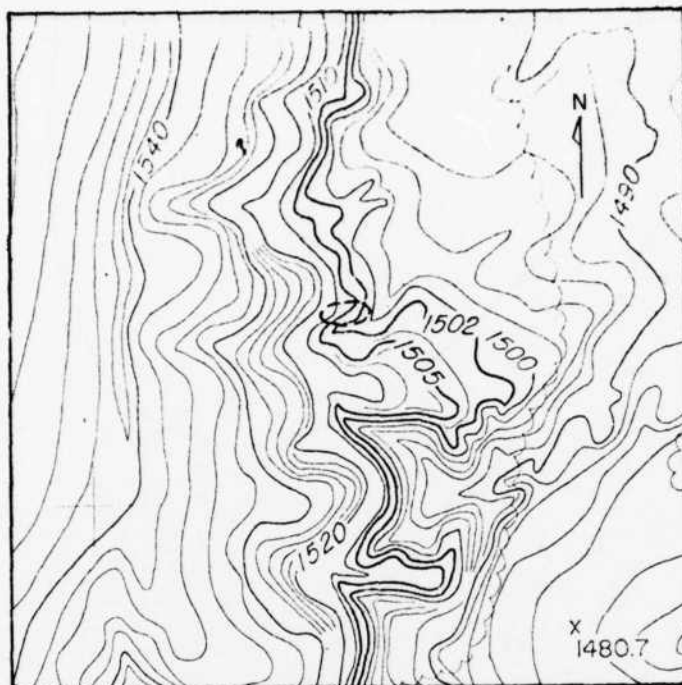


Figure 41. Topographic map of Site 41KX66.

The dimensions of the site are about 20 m east-west by 8 m north-south (Fig. 42). The dugout is oriented with the long axis in a northwest-southeast direction. For the sake of simplicity, the dugout will be discussed as if the long axis were north-south. When the site was first visited, the sandstone slab wall on the south end of the dugout and part of the west wall were still standing intact (Fig. 43). The remainder of the west wall and the east wall had fallen inward. Other than the dugout (Feature 1), two additional features were recognized on the site. These are a possible hearth (Feature 2) and a trash area (Feature 3). These features are described individually below.

Investigations: Before any collections were made or any testing was done, a map was made of the site and photographs were taken of the dugout. The dugout was mapped showing the exposed parts of the fallen walls. A 1 m by 2 m test pit (long axis north-south) was placed in the southwest corner of the structure

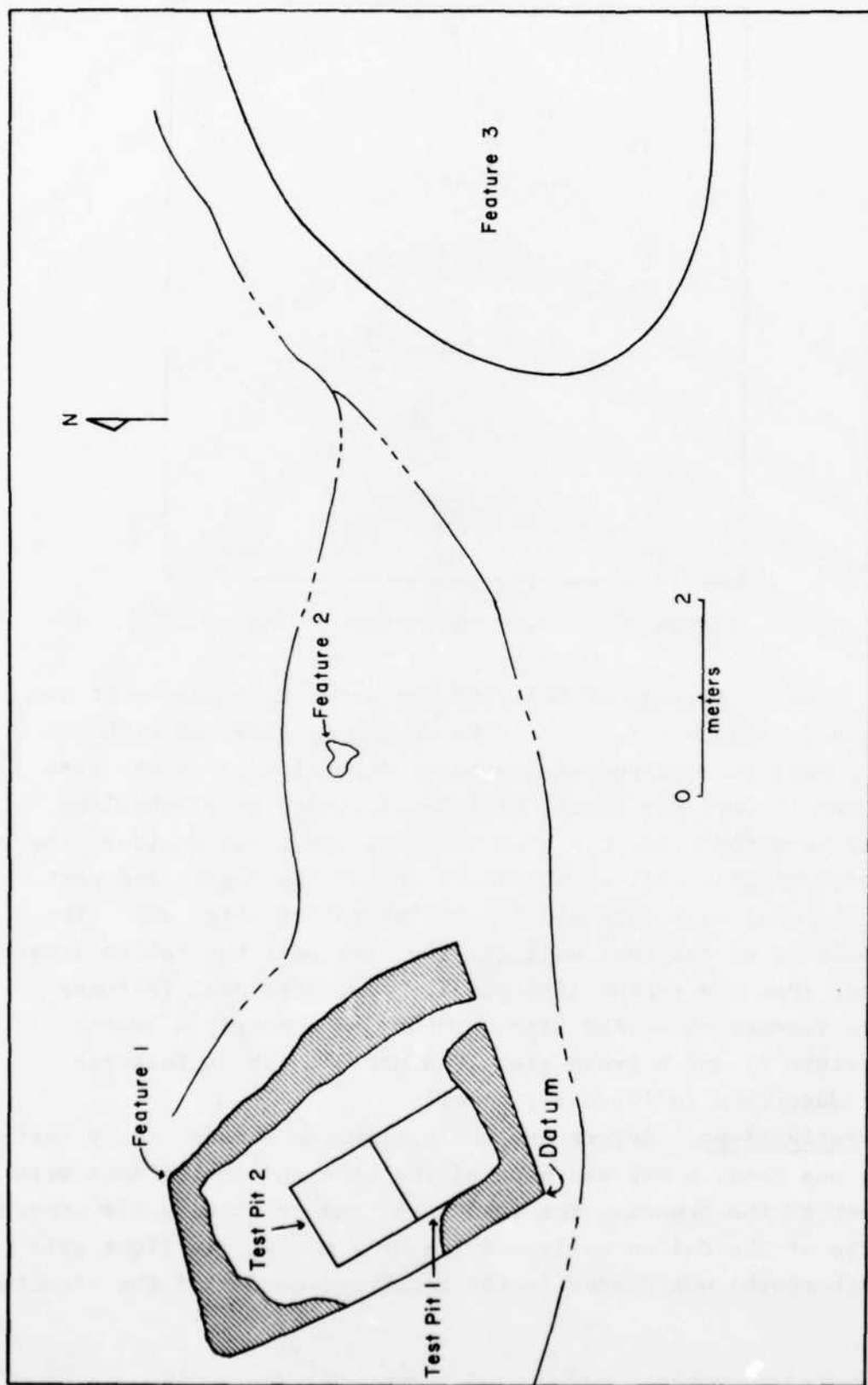


Figure 42. Map showing features at Site 41KX66.



Figure 43. Looking southwest across the dugout at Site 41KX66 prior to excavation.

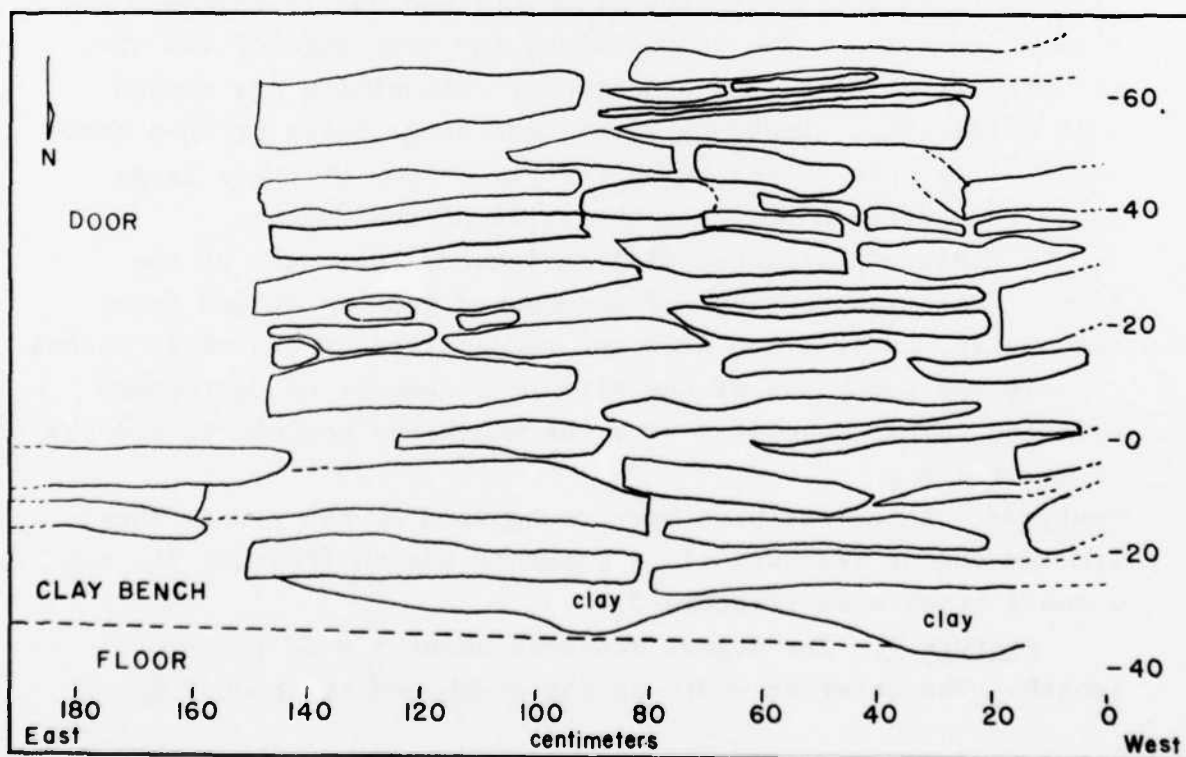


Figure 44. Profile of interior of south wall of dugout at Site 41KX66.

to determine the nature of the fill and the depth to the floor. In this preliminary testing, excavation was by 10 cm levels. Based on the results of this testing, it was determined that the fill could be removed as a unit. The rest of the structure was excavated in this manner.

The floor was reached at a depth of about 64 cm below the present surface. The floor was mapped and the locations of the few items found were plotted. A few specimens were found in the fill, and their locations and depths were plotted. Charcoal found in the structure was collected for possible C-14 and dendrochronological dating.

Feature 2, the possible hearth, was cleared with a trowel and mapped. Feature 3, the trash area, was carefully searched for artifacts and each was collected. These items were not mapped in place, nor was the feature troweled.

Deposits: All of the deposits at the site are Permian redbeds. The low ridge into which the structure was dug is composed of shales and clays. The bluffs along the west edge of the site are primarily shales and sandstones. The bluffs are capped with a resistant sandstone layer, and large slabs of this sandstone litter the slopes below the rim. Some of these large slabs were used in building the walls of the dugout.

A small depositional flat is located just east of the site. This flat consists of decomposed bedrock eroded from the bluffs and from the site and redeposited by the small washes.

To the southeast of the site is a remnant of Quaternary alluvium. This deposit covers the weathered bedrock to a depth of about 1 m.

Features: Three features were recognized at the site. These are the dugout (Feature 1), a possible hearth (Feature 2), and a small trash area (Feature 3).

Feature 1. The dugout measures about 3 m in interior length. The interior width at the south end is about 1.95 m

and at the north end about 1.65 m. The floor is near the present ground surface at the south end, and is dug into the ridge to a depth of about 1.13 m at the north end. Rock walls were built along the south side and parts of the east and west sides. The wall was stacked to a height of 1.26 m above the dugout floor at the southwest corner. The entrance was at the east end of the south wall.

The rock walls seem to have been built on the original ground surface bordering the excavation rather than on the floor of the dugout. The walls were built of sandstone slabs taken from the talus slopes immediately west of the site. The largest slabs used in the wall are about 100 x 50 x 10 cm in size. Most of the stones are about 40 to 75 cm in length, 50 cm in width, and 5 to 10 cm in thickness. The edges of the slabs were not modified except perhaps for some minor shaping around the door (Fig. 44). The slabs were arranged so that the inside of the wall was straight, thus leaving the outside very irregular. Mud chinking was not evident in the standing portions of the walls. Some possible chinking was found between some of the stones as the fallen eastern wall was excavated.

A thin charcoal layer was found a few cm above the floor over the entire structure. The burned material consisted of twigs and small branches which ranged up to about 8 cm in diameter. The fill both above and below this charcoal zone was burned. This suggests that the structure had a brush roof covered over with dirt. The west and east walls seem to have fallen in (or were pushed in) soon after the roof burned and collapsed.

The floor was fairly flat and hardpacked. Eight large sandstone slabs were found lying flat on the floor and clustered near the north wall (Fig. 45). One of the smaller slabs was lying near the west wall slightly apart from the others. Some of these stones may be from the wall, but no other wall stones were found lying flat on the floor. These stones seem

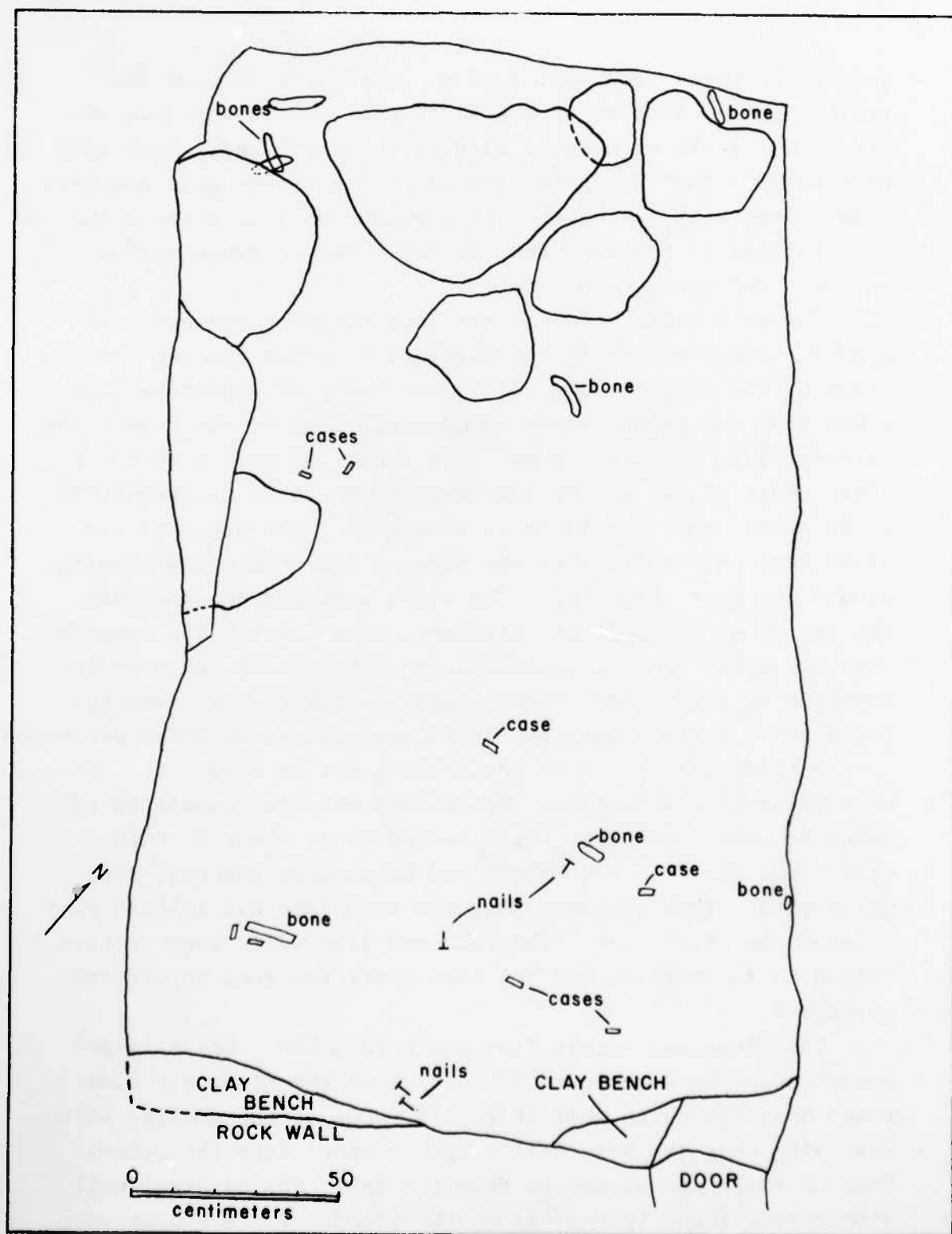


Figure 45. Plan of dugout floor at Site 41KX66.

to have had some special purpose, possibly as the base for a hearth. However, no definite evidence of a hearth was found here or elsewhere within the structure.

Forty-three specimens were collected from the floor of the dugout. A group of three unburned bison(?) rib fragments was found in the northwest corner. Five similar fragments and a bird bone fragment were scattered across the southern end of the floor. Two buttons and four square nails were found in the southern end of the structure. Seven cartridge cases were found scattered across the floor from one end of the dugout to the other. A "spring flower" and 14 cartridge cases were found in a cache under a large flat stone lying about midway along the western wall. All 14 of the cartridge cases are .44 caliber. Six unidentifiable burned seeds were also recovered from the floor.

The fill removed from the dugout consisted of fallen wall stones, burned earth and charcoal near the floor, and dirt washed in from the weathered bedrock upslope. A total of 23 specimens were collected from the fill, 15 of these being charcoal samples. The remaining eight specimens are cartridge cases. Some of these cartridge cases may have been on the roof of the structure when it collapsed, and others may have washed in as the depression filled with sediment.

The entrance to the dugout is in the east end of the south wall and is about 42 cm in width. The doorsill is a single large slab 33 cm above the floor. Some symbols were found pecked into the slab (Fig. 46) as if they had been done from inside the dugout. The symbols cover the width of the doorway. These symbols may be interpreted as "t A t A." The left "t" or "cross" is approximately 13.5 cm in height and 11.5 cm in width. The left "A" is about 14.5 cm in height and 14 cm in width at the base. The right "t" is about 16 cm in height and 9 cm in width. The right "A" is not nearly as plain as the other three symbols and is not measured.

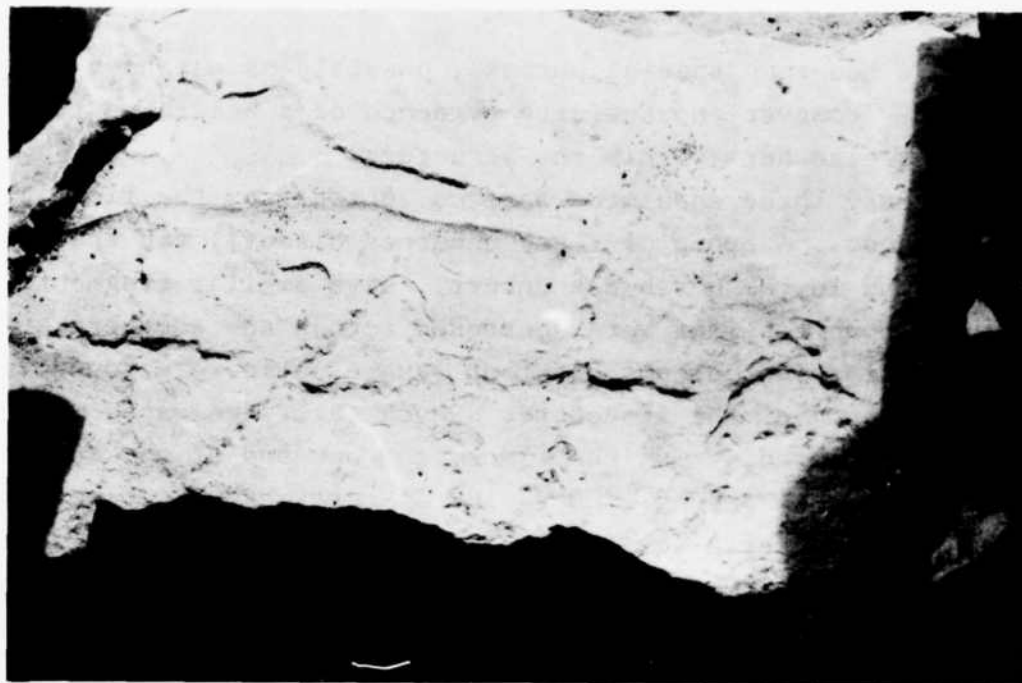


Figure 46. Looking south across pecked symbols on doorsill at Site 41KX66.



Figure 47. Looking north across Feature 2 at Site 41KX66.

According to Dr. Mary Gill (personal communication), "Tata" has been used in Spanish as a woman's nickname. If the symbols represent the word "tAtA," however, the small t's and large A's are a puzzle. It should be noted that the "tAt" symbols are connected while the last vague symbol on the right side is not. Therefore another possible reading of the symbols is a large flowing "W" with a line drawn horizontally through it. Could this be an early day cattle brand?

Feature 2. This feature is a possible hearth or ash dump located about 2 m east of the dugout. In size it was about 30 cm east-west by 20 cm north-south (Fig. 47). It consisted of blackened soil containing a few charcoal lumps. The feature was covered by no more than a couple cm of soil and had been severely weathered.

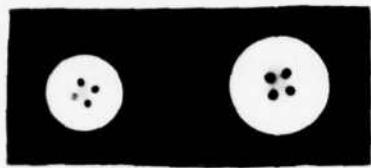
Feature 3. This feature is a trash area located at the eastern end of the site, about 6 m east of the dugout. It is on a weathered bedrock surface slightly higher than the surrounding ground. It measures about 10 m in a northeast-southwest direction and about 4.5 m northwest-southeast. It was a light scatter of trash, including one button, ten glass bottle fragments, three cartridge cases, and one fragment of tooth enamel.

Collections: 82 specimens (Fig. 48): 2 buttons, porcelain; 1 button, metal, cloth covered; 10 glass bottle fragments; 1 "spring flower," metal; 4 nails, square; 11 cartridge cases, .45 Colt; 4 cartridge cases, .44-40 WCF; 17 cartridge cases, .44 Colt; 1 bone, fragment, tooth enamel; 8 bone, fragments, ribs; 1 bird bone, fragment; 6 seeds, burned, unidentified; 16 samples, charcoal.

The collections from the dugout are described in the following groups; buttons (3), glass (10), metal (37), faunal remains, bone (10), floral remains, seeds (6), and charcoal samples (16). The collections are itemized by provenience in Table 13.

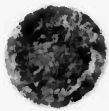
Figure 48. Artifacts from Site 41KX66. Item g x 7, others full size.

- a. Porcelain button, 41KX66-5.
- b. Porcelain button, 41KX66-40.
- c. Metal button, 41KX66-33, obverse.
- d. Metal button, 41KX66-33, reverse.
- e. Glass bottle fragment, 41KX66-4, rim.
- f. Glass bottle fragment, 41KX66-4, base.
- g. "Spring-flower," 41KX66-55.
- h. Square nail, 41KX66-31.
- i. Square nail, 41KX66-31.
- j. Cartridge case, 41KX66-21, .45 Colt.
- k. Cartridge case, 41KX66-35, .44-40 Winchester.
- l. Cartridge case, 41KX66-49.2, .44 Colt.
- m. Butchered bone, 41KX66-42.



a

b



c



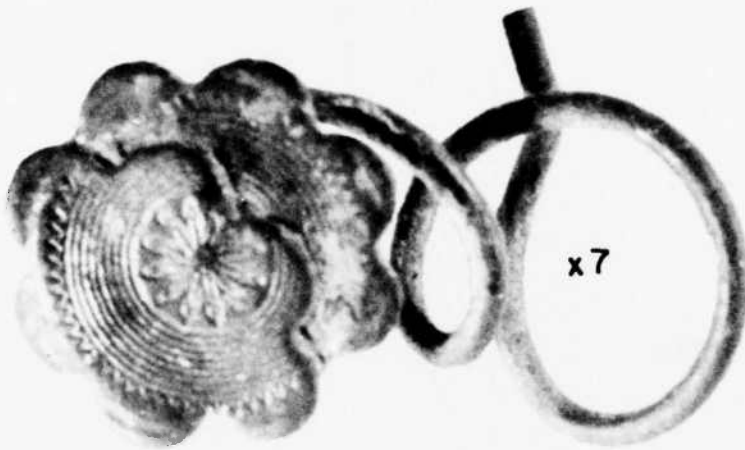
d



e



f



g

x7



h



i



j



k



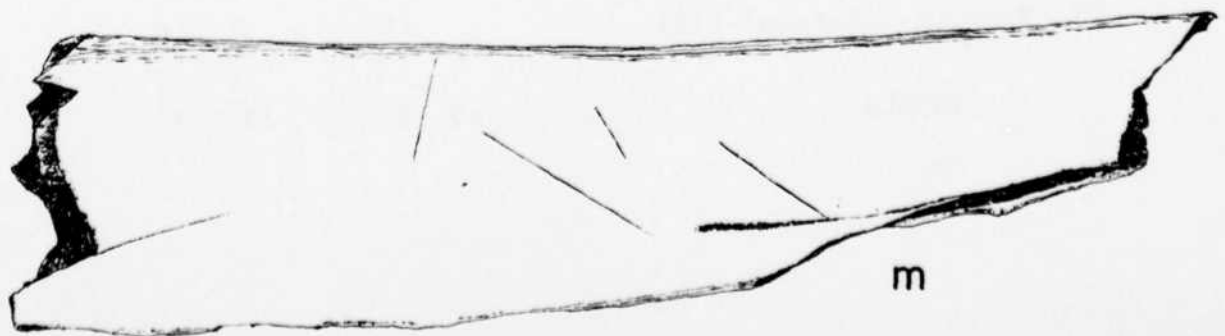
C



M



l



m

Table 13. Numbers of specimens by classes and proveniences for Site 41KX66.

	Floor, Feature 1	Fill, Feature 1	Feature 2	Feature 3	Totals
I. Buttons (3)					
A. Porcelain (2)	1			1	2
B. Cloth covered (1)	1				1
II. Glass (10)				10	10
III. Metal (37)					
A. "Spring-flower" (1)	1				1
B. Square nails (4)	4				4
C. Cartridge cases (32)					
1. .45 (11)	3	5		3	11
2. .44-40 (4)	3	1			4
3. .44 (17)	15	2			17
IV. Faunal remains, bone (10)					
A. Tooth enamel, bison(?) (1)				1	1
B. Rib fragments, bison(?) (8)	8				8
C. Bird bone fragment (1)	1				1
V. Floral remains, seeds, unid. (6)	6				6
VI. Samples, charcoal (16)		15	1		16
TOTALS	43	23	1	15	82

Two of the three buttons are porcelain or milk-glass (Fig. 48a,b), and one is a cloth-covered metal button (Fig. 48c,d). No identifying marks are present on any of the specimens.

Both of the porcelain specimens are four-hole buttons. One specimen measures 11 mm in diameter and 3 mm in thickness. According to Guffee (1976:43), "Roberson (1974:46) states that buttons of the 11 mm in diameter size are probably men's shirt buttons." The other button is 14 mm in diameter and 4 mm in thickness. Both have a central depression on one face.

The metal button is a two-piece button which probably had an eye soldered on the back. The eye on this specimen is missing (Fig. 48d). This type of button began being manufactured about 1830 and can still be found today. It was commonly used by all branches of the military with stamped designs of appropriate styles. Plain-faced buttons were in common use by civilians (Olsen 1963:552). This particular specimen was cloth-covered, but only the impressions of the cloth are still present. It is 15 mm in diameter but only 2 mm in thickness, having been mashed.

Ten very small glass fragments (Fig. 48e,f) were found in Feature 3. All of the fragments probably are from one bottle. The fragments are rim (2), body (5), and base (3). They resemble a 1 oz. strychnine bottle from Adobe Walls. The 1 oz. strychnine bottle is about 48 mm in height. The bottom measures about 19 mm by 25 mm. The neck diameter is about 17 mm and the height is about 16 mm. Our fragments are clear glass and no trademark is evident. There is also no trademark on the Adobe Wells specimen. A mold seam is present on one of the base fragments.

Metal items total 37 in the collections from the site. These are a "spring flower" (1), square nails (4), and cartridge cases (32).

The "spring flower" (Fig. 48g) may be an upholsterer's twist pin. The head of the specimen resembles a flower and is 9 mm

in diameter and .4 mm in thickness. The edges of the head are scalloped into eight arcs. The head is made in two pieces. The upper piece extends about half way across the head and is also scalloped where it crosses the center of the head. The head has a stamped design which is continuous on both pieces. The design from the outside toward the center consists of a zigzag line, a group of nine concentric circles, and a 12 petal arrangement in the center. Each petal has a line through it, all joining at the center. Each petal also has a "depressed petal" design within it. Attached to the back of the head is a small, spiral (spring?) wire. The wire is .85 mm in diameter.

Four square nails (Fig. 48h,i) came from the dugout floor. They are cut nails 67 mm in length.

There are 32 center fire cartridge cases from the site. They are .45 Colt (11), .44-40 Winchester (4), and .44 Colt (17). They do not have head stamps, and probably date from the early 1870's to 1880's. Similar cartridge cases may have been available and in use until the early 1900's, but these probably do not date this late. Data for the descriptions of these cartridge cases have been provided by Mr. Sandy Watts of San Antonio, Mr. E. C. Hossler of Amarillo, and Mr. Kim Taylor of Canyon. Standard measurements for cartridge cases of this kind are in inches, which are used here.

Eleven cases identifiable as .45 Colt were found at the site (Fig. 48j). These cases are 1-9/32 inches in length with a diameter of approximately .478 and .480 inches. These cartridges were introduced in 1873 by Colt as one of the cartridges for their single-action Army revolver. They were adopted by the U.S. Army in 1875. These cases were originally loaded with 40 gr. of black powder behind a 255 gr. conical lead bullet.

Four cases identifiable as .44-40 Winchester were found (Fig. 48k). These cases are 1-9/32 and 1-5/16 inches in length with diameters of .465 inches at the head and .436 inches at

the mouth of the case. One shell is a little short (1-9/32) but still checks with .44-40. These cartridges were introduced in 1873 along with the Winchester Model 1873 lever-action repeating rifle. Colt soon followed with single-action revolvers of this caliber. With its original black powder loading, this was the first cartridge which could be effectively interchanged between the rifle and the revolver. These cases have a very subtle shoulder about .905 inches from the head. These cartridges were originally loaded with 40 gr. of black powder and a 200 gr. flat-nosed lead bullet.

Seventeen cases identified as .44 Colt were found (Fig. 48l). These cases are 1-3/32 inches in length and range from .457 to .460 in diameter. All appear to be of brass stock and some may have been nickel-plated. The cases are of the early type, probably 1871 to 1880, although they were used and were available until at least 1900. These cartridges were introduced in 1871 and were an official U.S. Army cartridge from then until 1873. The ammunition and revolvers chambered for it are both rare. These cases were probably used in an 1860 cap-and-ball percussion Colt revolver converted to center-fire by Colt. Ballistically, they are similar to the S&W .44 American. These cartridges were loaded with 30 gr. of black powder and a 225 gr. conical, flat-nosed lead bullet.

The faunal remains include a tooth fragment (1), rib fragments (8), and a bird bone (1).

The tooth enamel consists of one small fragment from an unidentified mammal, probably large.

The ribs are medial fragments from a large mammal, probably bison. The fragments vary from 13 cm to 22.5 cm in length. Two of the ribs are partially burned. Both burned fragments were recovered from the south end of the dugout floor. All of the rib fragments have from one to several butchering marks (Fig. 48m). The marks seem to have been made with a metal knife. They are scratches rather than deep cuts. Most of the marks are perpendicular or diagonal to the long axis of the rib.

The bird bone is a fragment 6 cm in length. The processes are missing from both ends of the bone, and no definite identification can be made.

Four seed fragments and two seeds were collected from the floor of the structure. These are burned and unidentified. The seeds are round and somewhat smaller than hackberry seeds. Their presence on the floor may be fortuitous.

Sixteen charcoal samples were collected for possible C-14 or dendrochronological dating. Of these, 15 were taken from above the floor in the zone of burned roof debris. The other sample was taken from Feature 2.

Analysis: None of the specimens found at Site 41KX66 has any identifying marks. Several of the items, such as the buttons, have been in use for a long time, and therefore are of little help in dating the site. With other items, such as the cartridge cases, an approximate date can be inferred. Based on the cartridge cases, Alton Briggs (personal communication) suggests an occupation sometime between 1880 and 1890; others suggest occupation during the 1870's and 80's.

None of the artifacts tells which of several possible groups actually occupied the site. It has been suggested that the site was occupied by Mexican sheepherders or American buffalo hunters. Buffalo hunters are known to have been in the region during the 1870's and early 1880's (see the historical background section of this report). They are also known to have built stone structures (Lee 1964:146-167). However, the cartridge cases collected from the site may be too small a caliber to have been used in hunting bison. That this site was occupied by an early day cowboy or trapper is also possible.

Charcoal samples were collected from the dugout for possible C-14 and/or dendrochronological dating. No C-14 dating has been attempted due to the recent age of the site. The dendrochronological analysis did not produce any dates for the site (Appendix II).

Although restoration of the dugout is feasible, it is not recommended. The excavation of the dugout and the analysis of the collections has provided valuable data concerning early historic settlements in the Bluff Creek valley. But since the occupants of the site are unknown, restoration and protection of the dugout does not appear to be worth the time and money required. Also, the site is less likely to be vandalized if left "as is."

Interpretations: Site 41KX66 appears to have been occupied sometime during the 1870's to 1880's, possibly as a buffalo hunter's camp, but more likely by cowboys or trappers. Although the stone dugout suggests an occupation for an extended period of time, relatively little trash was found.

Site 41KX67

Location: This site is in a small side canyon on the south side of Bluff Creek (Fig. 10). It is about 100 m south of the east end of Site 41KX43.

Observations: The site is a rock wall (Fig. 49), doubtless of the historic period. Originally the wall may have extended across the canyon from the east rim to the west rim. In most places the wall has collapsed and fallen downslope. It was constructed of thin, flat sandstone slabs, stacked atop one another to form a low wall. The portions of the wall which are still standing are approximately 1 m in height.

On the east slope of the canyon, the wall extends from the rim downslope to the edge of the present wash. A small section of the wall is still standing on the eastern edge of the wash. On the western slope, the wall is still partially standing from the rim downslope to a steeper portion of the slope. There is not much evidence for the wall having extended across the floor of the canyon to the edge of the wash.

The canyon floor has a heavy juniper cover, but there is much less on the steep slopes. Erosion is severe on the slopes,



Figure 49. Looking southwest across historic rock fence (Site 41KX67)

which resulted in the collapse of the wall. The canyon is rimmed by a resistant sandstone layer, and large slabs are scattered down the slopes. The slabs used in building the wall were taken from the slopes.

A dugout has been reported as being near the mouth of this small canyon. The dugout may have been associated with the wall. Several searches failed to locate the structure.

Collections: No collections were made at the site.

Analysis: The long gap in the stone wall on the western side of the canyon floor suggests that a less permanent kind of wall or fence, such as posts or brush, was used in this location.

Interpretations: Perhaps the small canyon was utilized as a natural corral for livestock. The stone wall or fence was built to close off the mouth of the canyon. The site represents utilization by an unknown historic group.

XII. SITES OUTSIDE THE PROJECT AREA

During the course of the investigation, 11 archeological sites were visited or recorded outside the project area. These sites are located in various parts of Cottle, King, and Knox counties. One of the sites, 41KG10, was recorded during the previous survey (Hughes 1972). These sites were visited in order to broaden our understanding of the archeology of the region. Since these sites will not be disturbed by construction activities of the Truscott Reservoir Project, maps showing their locations are not provided. It is felt that these sites will be better protected if their exact locations are not published. Exact locations of these sites are on file at the Archeological Research Laboratory at West Texas State University.

Site 41KG10

Location: The site is located on a Quaternary terrace on the north side of the South Wichita River, west of the Bateman Pumping Station.

Observations: The site has a thick grass and juniper cover. It has been disturbed by an oil field road which crosses in an east-west direction. Lithics were scattered along the road for a distance of about 25 m. The site seems to have been affected by erosion only along the road.

Collections: 1972 - 44 specimens: 1 dartpoint or knife, edge fragment; 22 flakes, cortex, unworked; 10 flakes, non-cortex, unworked; 8 rocks, burned; 3 shells, mussel, unworked fragments (Hughes 1972: Tables 3 & 4, Appendix V-A).

1977 - 52 specimens: 1 chopper, bifacial; 1 chipped pebble, unifacial; 2 scrapers, flake; 1 hammer, pebble; 1 stone, worn, unidentified fragment; 13 flakes, cortex, unworked; 33 flakes, non-cortex, unworked.

Analysis: Of the total 98 specimens from the site, 81.63 percent are unworked flakes. Each of the remaining classes is represented by only one or two artifacts.

Two exotic lithic materials occur at the site, Edwards flint (16.09%) and Tecovas jasper (1.15%). The remaining lithic materials are milky quartz (3.45%), Potter chert (33.33%), purple quartzite (12.64%), silicified wood (1.15%), quartzite (13.79%), and unidentified stone (18.39%).

Interpretations: The site was occupied briefly in prehistoric times as a camp by an unknown group.

Site 41KG12

Location: The site is on a high divide between the South Wichita River and Bird Creek, being closer to the latter.

Observations: The site occupies a small knoll which is the highest point around. The soil seems to be mainly clay. There is some grass cover. The site has a light scatter of lithics and an occasional burned rock. No diagnostic tools were found.

It is reported that a former resident of Benjamin had helped excavate a burial at the site several years ago. A polished stone item with two holes drilled in it (a gorget ?) is reported to have come from the burial.

Collections: 10 specimens: 1 turtleback, bifacial; 5 choppers, bifacial; 1 retouched flake; 2 cores; 1 flake, non-cortex, unworked.

Analysis: The collections contain too few items for a valid statistical analysis. Lithic materials at the site include Potter chert (2), purple quartzite (3), quartzite (2), and unidentified stone (3).

Interpretations: The site may have served briefly as a camp for an unknown prehistoric group.

Site 41KX21

Location: The site is located on a high sandy Pleistocene rim overlooking the Salt Fork of the Brazos River to the north. The site is east of Rhineland.

Observations: The site is partially in cultivation and is partially exposed along a cutbank. Bulldozing has disturbed part of the site along the rim. Two probable sandstone hearths are eroding from along the upper part of the cutbank. Most material was found eroding from the cutbank, although a few flakes were collected from a farm road along the edge of the cultivated field.

A burial of undetermined sex and age has been excavated at the site by Albert Redder. The burial had two slabs of Permian shale stacked in an A-frame manner with the skeleton beneath them. The person was lying on the right side facing north, with the legs tightly flexed. There was a quartzite boulder above the head and another roundish cobble between the knees and the face. A bone bead was found lying parallel to a long bone near the ankle. The bead was not decorated but cut marks were visible at one end (Albert Redder, personal communication).

Collections: 75 specimens: 1 arrowpoint, unidentifiable fragment; 1 knife; 1 flake knife; 1 gouge, unifacial; 1 chopper, bifacial; 1 spokeshave; 2 gravers; 1 scraper, end; 5 scrapers, flake; 5 retouched flakes; 1 mano, bifacial; 1 mano, unifacial; 1 core; 1 pebble, tested; 21 flakes, cortex, unworked; 20 flakes, non-cortex, unworked; 9 rocks, burned; 1 bone, fragment; 1 shell, mussel, unworked fragment.

Analysis: Excluding the bone and shell fragments and burned rock, 69.35 percent of the specimens are debitage. The arrowpoint indicates a NeoIndian occupation, while dartpoints previously collected by Redder (personal communication) and the gouge in our collection indicate an Archaic occupation.

Three exotic lithic materials were collected from the site. These are Alibates agate (1.56%), Edwards flint (32.81%), and Tecovas jasper (3.13%). Local materials are milky quartz (6.25%), Potter chert (23.44%), sandstone (1.56%), silicified wood (6.25%), quartzite (12.50%), and unidentified stone (12.50%). The high percentage of Edwards flint suggests strong ties with the Edwards Plateau area.

Interpretations: The site is interpreted as a camp occupied repeatedly during the Archaic and NeoIndian Stages.

Site 41KX26

Location: The site is on a Pleistocene rim overlooking the Salt Fork of the Brazos River to the south. It is between Benjamin and Knox City.

Observations: The rim on which the site is situated has a heavy grass cover, and a mesquite thicket occurs to the north away from the bluffs. The site covers the bluff top along the river for a distance of about 100-125 m east-west, and extends to the north for an undetermined distance. Disturbances at the site include some minor sheetwashing, a small amount of potting, and a ranch road crossing the area.

Only a light lithic scatter was observed on the surface. Most material collected was from the backdirt around the pot-holes. A noteworthy fact about the site is the presence of ceramics and obsidian. Local collections from the site contain cf. Garza points. No features were observed. Redder (1973) reports that the occupational zone is only about 5-8 cm in thickness.

Collections: 122 specimens: 1 arrowpoint, unidentifiable fragment; 1 turtleback, unifacial; 1 scraper, side; 2 scrapers, flake; 4 retouched flakes; 1 core; 23 flakes, cortex, unworked; 70 flakes, non-cortex, unworked; 5 sherds; 13 bone, unworked fragments; 1 shell, mussel, unworked fragment.

Analysis: In the collections, unworked flakes total 91.26 percent. Although our sample is small, it is evident that a great deal of tool manufacture and refurbishing was occurring at the site. Of the unworked flakes, 71.28 percent are very small non-cortex flakes.

Exotic lithic materials at the site are of three kinds: Edwards flint (76.70%), obsidian (0.97%), and Tecovas jasper (4.85%). Together they constitute 82.52 percent of the lithic inventory. The other materials, of local origin, are Potter chert (9.71%), and unidentified stone (1.94%). The extremely high percentage of Edwards flint indicates very strong contact with the Edwards Plateau area.

Interpretations: The cf. Garza points suggest occupation during the NeoIndian Stage, sometime prior to 1500 A.D. (Perino 1968:22). The presence of ceramics also indicates NeoIndian occupation. The site seems to have been a temporary camp rather than a permanent village.

Site 41KX32

Location: The site is on a Pleistocene rim overlooking the South Wichita River valley to the north. The site is north of Benjamin.

Observations: The site is on a high spur and has been much disturbed by erosion. The sandy alluvium contains a small amount of gravel. Extensive deposits of gravel cover the slopes to the north of the site. No features were found.

Collections: 37 specimens: 1 dartpoint or knife; 3 knives; 1 turtleback, unifacial; 1 chipped pebble, bifacial; 1 retouched flake; 1 core; 17 flakes, cortex, unworked; 12 flakes, non-cortex, unworked.

Analysis: The collections are too small for much statistical analysis. One exotic material was found at the site. This is Tecovas jasper (2.70%). Local materials are Potter chert

(45.95%), silicified wood (13.51%), quartzite (8.11%), and unidentified stone (29.73%).

Interpretations: The site may have been a brief camp or lookout occupied by an unknown prehistoric group.

Site 41KX77

Location: The site is located on a high Quaternary terrace overlooking the Salt Fork of the Brazos River to the south. It is a few miles to the southwest of the Brazos River bridge on Farm to Market Road 143.

Observations: The site has only recently been cleared and is presently in cultivation. The terrace slopes southward to the Brazos and eastward to a large southeastward-draining wash. The site has a light lithic scatter over a large area. Several burned sandstone slabs were scattered across the site, and a disturbed sandstone hearth was found at the southern edge of the site.

Local collections from the site include potsherds, and projectile points of Alibates agate and Tecovas jasper. Some polychrome sherds have reportedly been found at the site.

Collections: 114 specimens: 1 unclassified fragment, bifacial; 1 spokeshave; 2 scrapers, side; 1 scraper, flake; 7 retouched flakes; 1 hammer, pebble; 1 stone, worn, unidentified fragment; 2 cores; 21 flakes, cortex, unworked; 56 flakes, non-cortex, unworked; 14 rocks, burned; 7 bone, unworked fragments.

Analysis: Exotic lithic materials in the collections are Alibates agate (2.17%) and Edwards flint (73.91%). Local materials are Potter chert (5.43%), purple quartzite (1.09%), silicified wood (4.35%), quartzite (1.09%), and unidentified stone (11.96%).

The high percentage of Edwards flint indicates much contact with the Edwards Plateau. The presence of Alibates agate suggests some contact with peoples to the northwest and the presence

of polychrome sherds suggests some contact with the eastern pueblos.

Interpretations: The site appears to have been a camp occupied during the NeoIndian Stage, perhaps repeatedly. The presence of Edwards flint, Alibates agate, and puebloan pottery indicates contact with peoples to the south, northwest, and far west.

Site 41KX78

Location: This site is located on a Permian terrace about 500 m north of the Salt Fork of the Brazos River. It is between Benjamin and Knox City.

Observations: The site is situated several hundred meters south of a Permian bench. Two small erosional remnants are located on the site. The entire area is badly sheetwashed with no grass cover. A few juniper are scattered around the site.

The site is a scatter of lithics and burned rock. It covers an area about 100-125 m east-west by 75-100 m north-south. One large concentration is located in the southwestern part of the site. It contains much burned rock, as well as other lithics. It measures about 3 m by 8-10 m with the long axis oriented north-south. The percentage of burned rock seems to be higher in this concentration than elsewhere on the site. The burned rock is mainly Potter chert and quartzites. All artifactual material is lying directly on the weathered bedrock.

Collections: 252 specimens: 1 dartpoint, Darl; 1 dartpoint or knife; 2 knives; 3 crude bifaces; 2 gouges, unifacial; 1 turtle-back, bifacial; 2 choppers, bifacial; 3 choppers, unifacial; 2 chipped pebbles, bifacial; 1 chipped pebble, unifacial; 1 unclassified fragment, bifacial; 1 spokeshave; 5 gravers; 1 scraper, end; 1 scraper, unclassified fragment; 9 scrapers, flake; 22 retouched flakes; 8 hammers, pebble; 7 hammers, edge fragments; 2 manos, bifacial; 2 stones, worn, unidentified fragments; 7 cores; 3 pebbles, tested; 78 flakes, cortex, unworked; 26 flakes, non-cortex, unworked; 61 rocks, burned.

Analysis: The site has a high percentage (65.75%) of items related to flint knapping, which suggests a workshop. The number of knives and scrapers suggests a late, specialized camp.

The lithic materials are local except for Edwards flint (1.66%). The other materials are Potter chert (62.98%), purple quartzite (16.02%), silicified wood (4.42%), quartzite (7.18%), and unidentified stone (7.73%).

Interpretations: The site may have served both as a camp or specialized processing station and as a lithic workshop. The Darl point indicates a Terminal Archaic occupation and the gouges suggest an earlier occupation.

Site 41KX79

Location: The site is located north of Rhineland and north of the Salt Fork of the Brazos River.

Observations: The site is in an eroded area with erosional remnants containing gravel deposits. The gravel deposits are extensive. The site seems to be a quarry, with many artifacts scattered throughout the gravel deposits. Burned rocks were observed but no concentrations suggesting hearths or boiling pebble dumps were found.

Collections: 31 specimens: 1 knife; 5 crude bifaces; 1 gouge, bifacial; 4 gouges, unifacial; 3 choppers, bifacial; 1 chopper, unifacial; 2 chipped pebbles, bifacial; 1 scraper, flake; 1 retouched flake; 3 cores; 1 pebble, tested; 6 flakes, cortex, unworked; 2 rocks, burned.

Analysis: These collections are not a representative sample of the artifacts at the site. Only obvious tools were mainly collected. The site would merit a more thorough investigation if it were ever threatened.

Lithic materials are all from the local gravel source. They are milky quartz (6.90%), Potter chert (48.28%), purple

quartzite (13.79%), silicified wood (6.90%), quartzite (13.79%), and unidentified stone (10.34%).

Interpretations: This site contains a lithic resource which probably was visited repeatedly over a long span of time. The gouges suggest utilization during at least the early part of the Archaic Stage.

Site 41KX80

Location: This site is located on a high terrace overlooking the breaks of the North Wichita River to the north. The site is northeast of Truscott.

Observations: The site is presently in cultivation. It is a lithic scatter spread over a moderate area. No features were encountered. A local collection contains a large sandstone grinding slab from the site. The grinding slab is 57 cm in length, 29 cm in width, 9 cm in thickness, and has a basin approximately 3 cm in depth. The slab weighs about 21 kilograms (47 lbs.).

Collections: 4 specimens: 1 flake knife; 1 gouge, unifacial; 1 mano, bifacial; 1 grinding slab, fragment.

Analysis: The collections are inadequate for statistical analysis. It should be noted that the only grinding slab fragment found during our work is from this site. This is also one of four sites which produced a sandstone mano.

Interpretations: The site appears to be a briefly occupied prehistoric camp.

Site 41KX81

Location: This site is near Site 41KX77 on a high Quaternary terrace overlooking the Salt Fork of the Brazos River to the south. It is a few miles to the southwest of the Brazos River bridge on Farm to Market Road 143.

Observations: The site is bordered on the north by a large wash oriented in a northwest-southeast direction. The site

has only recently been cleared and presently is in cultivation. It is a light lithic scatter covering a small area. A disturbed sandstone slab hearth is present. Two small broken grinding slabs had previously been found on the site.

Collections: 7 specimens: 1 turtleback, bifacial; 1 chopper, bifacial; 4 flakes, cortex, unworked; 1 flake, non-cortex, unworked.

Analysis: Too few items were collected for statistical analysis. Lithic materials are Edwards flint (4), Potter chert (2), and purple quartzite (1).

Interpretations: The site may have been a brief camp occupied by an unknown prehistoric group.

Site 41KX83

Location: This site is located southwest of Truscott on the south side of China Lake.

Observations: The site is an historic cemetery with two marked graves. The grave stones are sandstone slabs with names and dates carved into the stone. The stones have been painted with silver paint (as protection against weathering?). The graves are covered with several layers of large flat sandstone slabs. The inscriptions read as follows: Rubie M. Sheek, age 13 mo. and 7 days, died April 29, 1885; and Lee A. Sheek, June 11, 1890, to June 13, 1891.

Collections: None.

Analysis: None.

Interpretations: This cemetery dates from the time of some of the earlier Anglo settlements in the Truscott area.

Site A1544

Location: This site is located in Cottle County overlooking the Pease River to the south. It is east of Farm to Market Road 104.

Observations: The site is on a gravelly Pleistocene rim. A small scatter of lithics and burned rock was found. No features were discovered.

Collections: 6 specimens: 1 gouge, unifacial; 1 scraper, flake; 2 flakes, non-cortex, unworked; 2 rocks, burned.

Analysis: The collections are too limited for analysis. Lithic materials are Potter chert (2), Tecovas jasper (1), and unidentified stone (1).

Interpretations: The site may have served as a brief camp during one of the earlier substages of the Archaic Stage.

XIII. PALEONTOLOGICAL SITES

Six paleontological sites were recorded during the field-work on the Truscott Reservoir Project. Although a search for paleontological sites was not a part of the scope of the present project, such sites were recorded as they were found. All of the paleontological sites are of Pleistocene age, and five are fossiliferous pond deposits.

In the project area, the eroded edges of the Pleistocene sediments capping the Permian strata often reveal small pond deposits. The pond deposits are a gray to white sandy clay distinct from the reddish-brown gravelly sand of the enclosing sediments. The pond deposits often contain both vertebrate and freshwater invertebrate fossils.

Schultz (1972: 2-51 to 2-53) explored and recorded the occurrence of Pleistocene fossil material along the northern and eastern sides of the Truscott Reservoir area. A lack of time prevented a thorough search of these Pleistocene beds over their entire extent.

Site P286 is the remains of a large pond deposit located on the northern rim of the Truscott Reservoir (Fig. 10). There is much small bone scrap eroding from the edges of the deposit. No freshwater clams or snails were found. One unworked flake of Edwards flint was found with the bone on the eroded slope. No lithic material was found eroding from the deposit. This Pleistocene deposit is probably too old for associated human activity. The flake found with the bone scrap is believed to postdate the deposit. Collections consist of an upper molar of Equus sp., two distal epiphyses of metapodials of Bison sp., a glenoid fossa of a scapula of an indeterminate genus, and miscellaneous bone scraps including tooth fragments of camel, mammoth, horse, and bison. The bison remains are less mineralized than the other specimens, and therefore are probably much younger.

Site P287 is also the remains of a large pond deposit. The site is on the northern side of the reservoir and west of the Antelope Flat Road (Fig. 10). It is exposed in a highly eroded area. Mineralized bone scrap was present at several places around the exposure. A small concentration of large bone fragments was found and a sample was collected. The sample includes four foot bones (carpals and/or tarsals) and two pieces of enamel plate from a tooth of Mammuthus sp.

Site P288 is a pond deposit located outside the project area, on the southern rim of the North Wichita River valley to the north of the reservoir area. Collections from this locality include a pelvic acetabulum fragment, possibly from a camel, and an unidentified bone fragment.

Site P289 is a pond deposit located outside the project area, on a county road south and west of a ford across the North Wichita River, to the north of the reservoir area. Collections include only 20 pieces of small, mineralized, unidentifiable bone scrap.

Site P290 is a pond deposit located in the upper drainage of China Creek to the south of the reservoir area. Numerous pieces of bone scrap were found, but no collections were made. Fragments of a mammoth tusk have previously been found by local collectors.

Site P291 is located along the pipeline right-of-way (Fig. 9). The site is badly eroded and revealed a light scatter of mineralized bone fragments over a small area. No pond deposits were found. The collection includes two lower molars of Equus sp., a fragment of a jaw condyle, and a rib fragment.

Since very little material was found at any of these sites, and the fauna is well known from work at other localities, none of the sites appears to merit paleontological quarrying. However, if future paleontological work is conducted as a part of the Chloride Control Project in this area, it is recommended that Site P287 be more thoroughly examined.

XIV. THE COLLECTIONS

The present study has produced approximately 10,500 specimens. Of these, 10,334 are from archeological sites, and the remainder are from paleontological sites. The archeological collections include 10,250 items from prehistoric sites, and 84 items from historic sites. The prehistoric items and two of the historic items are described in this section of the report. Data from paleontological sites, and from one historical site (41KX66), are provided elsewhere in the report, where these sites are described.

The specimens described in this section of the report are inventoried in six tables which show their numbers and totals by classes, materials, and sites. The specimens are classified hierarchically using attributes of composition, treatment, function, form, and lithic material, cortex condition, and size if appropriate. The resulting classification is outlined in the tables.

Where site numbers are part of the tabulated data, the sites are separated into three groups on the basis of location: the pipeline, the reservoir area, and outside the reservoir area. Within groups, sites are listed in numerical order. Specimens listed under "I" are isolated finds which do not appear to be associated with sites.

In order to facilitate analysis and interpretation of the data, the specimens are sub-divided into four groups: stone tools (2238), lithic debitage (4305), fire-cracked rock (3557), and miscellaneous items (152). The stone tool category includes worked and utilized stone specimens; lithic debitage includes cores, tested pebbles, and unworked flakes; fire-cracked rock includes unworked burned items; and the miscellaneous category includes faunal remains, pottery, metal, and two kinds of samples. Most of the specimens are

from only a few of the sites. Samples of soil, wood, and charcoal were collected only from sites that were tested.

The specimen data are summarized in Tables 14-28. Tables 14, 16, 23, 24, 27, and 28 provide lists of numbers of specimens by classes and/or materials and sites. The remaining tables provide analytical data. Tables 14-22 relate to stone tools; Tables 23-26 relate to lithic debitage; and Tables 27 and 28 deal with fire-cracked rock and miscellaneous items respectively. More precise descriptions of the various specimen tables are provided in the List of Tables.

There are eleven categories of lithic material for stone items. These are Alibates agate (22), Edwards flint (448), milky quartz (56), obsidian (2), Potter chert (5385), purple quartzite (914), sandstone (56), silicified wood (550), Tecovas jasper (30), unidentified quartzite (1915), and unidentified stone (722). As previously mentioned in the discussion of lithic materials, the Alibates agate, Edwards flint, obsidian, and Tecovas jasper are exotic lithic types.

Most of the identified lithic materials were commonly utilized by prehistoric inhabitants of the region. However, the milky quartz and purple quartzite are present in relatively high percentages in terms of both regional preferences and availability of the materials. Local lithic preferences probably are being expressed.

STONE TOOLS

I. Stone tools (2238). On the basis of treatment, stone tools are classified as chipped (1793), battered (302), and worn (143). Where classification is difficult or ambiguous, as inevitably happens with such specimens, especially when the sample is large, degree of treatment is the determining factor. Descriptions are usually of groups of items such as classes of

Table 14. Numbers of stone tools by classes and sites.

Table 14. Numbers of stone tools by classes and sites.																												
		Pipeline								Reservoir																		
		41KG11	41KG14	41KG15	41KG16	41KG17	41KX60	41KX61	41KX62	41KX2	41KX3	41KX4	41KX5	41KX6	41KX7	41KX8	41KX9	41KX33	41KX34	41KX35	41KX36	41KX37	41KX39	41KX40	41KX41	41KX42	41KX43	41KX44
I. Stone tools (2238)																												
A. Chipped (1793)																												
1. Arrowpoints (6)																							1		1			
2. Dartpoints (49)			2				1			7		2							1	3		3				1	1	
3. Dartpoints or knives (14)										2	1								1			2		1				
4. Knives (87)				3						7	9	6		2		1				5		4	1	4		1		6
5. Flake knives (18)										4	3									3		2	1					
6. Drills (2)										1										1								
7. Crude bifaces (124)			1	3	2					19	6	5				2	2			12	1	5	1	4	2	5	3	4
8. Gouges (150)																												
a. Bifacial (35)				1	1		1			6	2	1								3		4	1	1		2	1	1
b. Unifacial (115)				3	4		1		1	18	20	3	1							5		13			1	2		8
9. Turtlebacks (24)																												
a. Bifacial (12)				1						1	1	2								1								1
b. Unifacial (12)										4	1									2				1				
10. Choppers (164)																												
a. Bifacial (108)				6	1	2	1			6	18	1	1	1	1	1	1			14		3		1		2	1	2
b. Unifacial (56)				2	2			1		6	5	1	1							7				1	1		3	
11. Chipped pebbles (131)																												
a. Bifacial (57)						2				10	2	4	4				3		2	7		3	1	1		1	1	1
b. Unifacial (74)				1	1					9	2	10	2	1		2		2	6	1		7				4	1	1
12. Unclass. frags. (10)																												
a. Bifacial (8)										4	1													1				
b. Unifacial (2)																												
13. Spokeshaves (47)				1						6	6	1	5				1			8		2	1	2	1	1		1
14. Gravers (68)				2	1		1			15	6	4			1		2			10	1	6			1	1		
15. Denticulates (7)												1					1				1							1
16. Scrapers (308)																												
a. End (23)										3	1	2								2	1					1	1	
b. Side (24)				1				1		6	1						1			1			1		1			
c. Unclass. (5)										3																		
d. Flake (256)				9	3	2		2	1	28	32	2	12	2		1			2	27		12		1	1	2	3	6
17. Retouched flakes (584)				11	9	2	3	4	1	1	1	1	1	3	2	5			2	85	1	42	4	3	5	14	3	20
B. Battered hammers (302)																												
1. Pebble (113)				3	2	1	1			8	7	2					1			4		11	1		4	7	5	1
2. Diacoids (25)				2			1			3	2									1		2	1		2		1	
3. Edge fragments (164)				3	3	1	3	1	1	8	2	2		2		2	1		1	5		13		1	10	16		
C. Worn (143)																												
1. Manos (125)																												
a. Bifacial (33)					1					2	3												1	2		1	2	1
b. Unifacial (24)											1	1	1							1			1	1		1	1	3
c. Unident. fragments (68)				18				1		8	2	1					1					2			3	5		3
2. Grinding slab (1)																												
3. Unidentified (8)											1		1							1								
4. Flakes (8)																				5		2		1				
5. Boatstone (1)																												1

Reservoir																Outside										Totals																			
41KX39	41KX40	41KX41	41KX42	41KX43	41KX44	41KX46	41KX47	41KX48	41KX49	41KX50	41KX51	41KX52	41KX53	41KX54	41KX55	41KX56	41KX57	41KX58	41KX59	41KX63	41KX64	41KX65	41KX68	41KX69	41KX70	41KX72	41KX73	41KX74	41KX75	41KX76	Isolated	41KG10	41KG12	41KX21	41KX26	41KX32	41KX77	41KX78	41KX79	41KX80	41KX81	Al544			
1	1		1	1	1	2		2		6		7	1								3	1	1							3			1	1			1						6		
	1						1		1				1		2																			1									14		
1	4		1	6		3	4	3		5	1	7	3						3	1									1			1		3		2	1						87		
1					1					1	1																							1					1				18		
																																												2	
1	4	2	5	3	4	1	2	1	4					7	2	7	9					2	1							3							3	5					124		
1	1		2	1	1		3			1					1	1				1		1	1														1						35		
		1	2	8	1	3				1	1		3	1	2	3			1				3							1	5			1			2	4	1		1		115		
					1																1													1			1						12		
	1								1	1																										1							12		
	1		2	1	2		3	1	3	4	1		2	3	1	5	1				5	1	2						1	1	1	1	5	1			2	3					108		
	1	1		3			1	1	1	2		1	4	1						1	3		2	1		1			1		1					3	1		1				56		
1	1		1	1	1		3	2	1				1																	2					1		2	2					57		
			4	1	1		4		2	1	1		6								5		1							2	1					1							74		
	1																																				1	1					8		
							1							1																														2	
1	2	1	1		1		2			1			2							1										2				1		1	1						47		
		1	1						2				4		2	1					1													2			5						68		
					1								1		2																													7	
				1	1		2	1					2								1	1								1	2			1			1							23	
1	1						1	1							2					1	1		1	1											1	2							24		
													1																															5	
1	1	2	3	6	2	5	1	5	4	2	4	1	4	4	17	13				6	2	5	2	2	3	1	1			3	2	5	2	1	9	1							256		
4	3	5	14	3	20	7	10	9	2	19	1	2	1	18	2	6	10			1	3	2	11		1		1		2	10		1	5	4	1	7	22	1						584	
1	4	7	5	1		2	4	2	2				16	4	8	5														2	1				1	8								113	
1	2		1										8																	1														25	
	1	10	16			1	2	3	5				37	2	8	6				1	11	1	1		1				3							7								164	
	2	1	2	1		3				1			5		2	1	1						1							1	1			1			2		1					33	
1	1		1	1	3			1	1				5	1	2	1											1							1											24
		3	5		3		1			1			16	2	3																														68
																																													1
																																													8
	1																																												8
																																													1
4	26	33	68	26	62	14	47	26	30	54	6	8	2	157	25	78	60	2	1	13	19	31	26	8	6	4	3	0	1	6	42		6	7	21	9	7	14	77	19	4	2	2		2238

tools; however, projectile points and other items of special significance are described individually. The percentages provided for the various tool classes are calculated exclusive of retouched flakes because some of these "tools" may not have been deliberately modified, and they are numerous.

From superficial examination of Table 14 it is apparent that although numerous stone tools belong to many different classes and come from many different sites, most of the sites produced only a few specimens representing only a few classes. There do not appear to be any distinct differences between sites that were test-excavated and sites that were surface-collected by any of the various methods employed.

A. Chipped (1793). Chipped stone items are classified mainly on the basis of probable function. The classes are listed in order of classes that are normally bifaces, classes that may be either bifaces or unifaces, and classes that are normally unifaces. The categories employed (Tables 14-16) are: arrowpoints (6), dartpoints (49), dartpoints or knives (14), knives (87), drills (2), flake knives (18), crude bifaces (124), gouges (150), turtlebacks (24), choppers (164), chipped pebbles (131), unclassified fragments (10), spokeshaves (47), gravers (68), denticulates (7), scrapers (308), and retouched flakes (584).

The descriptions of projectile points that follow contain kinds of information not supplied elsewhere in the text. Those relating to point typology, distribution, and cultural affiliation are from: Handbook of Texas Archeology Type Descriptions (Suhm and Jelks 1962); Guide to the Identification of Certain American Indian Projectile Points (Bell 1958, 1960; Perino 1968); and The Central Texas Archaic (Weir 1976a). Where possible, estimated ages are based on radiocarbon dates. In most instances these are from central Texas Archaic phases; in one instance they are provided by Bell. Other estimated dates are from the Suhm and Jelks volume.

Table 15. Numbers and percentages of stone tool classes.

	Numbers	Percentages
A. Chipped		
1. Arrowpoints	6	0.36
2. Dartpoints	49	2.96
3. Dartpoints or knives	14	0.85
4. Knives	87	5.26
5. Flake knives	18	1.09
6. Drills	2	0.12
7. Crude bifaces	124	7.50
8. Gouges	150	9.07
9. Turtlebacks	24	1.45
10. Choppers	164	9.92
11. Chipped pebbles	131	7.92
12. Unclass. frags.	10	0.60
13. Spokeshaves	47	2.84
14. Gravers	68	4.11
15. Denticulates	7	0.42
16. Scrapers	308	18.62
B. Battered hammers		
1. Pebble	113	6.83
2. Discoids	25	1.51
3. Edge fragments	164	9.92
C. Worn		
1. Manos	125	7.56
2. Grinding slab	1	0.06
3. Unidentified	8	0.48
4. Flakes	8	0.48
5. Boatstone	1	0.06
Total	1654	99.99

Table 16. Numbers of stone tools by classes and materials.

I. Stone	Alibates agate	Edwards flint	Milky quartz	Obsidian	Potter chert	Purple quartzite	Sandstone	Stiffified wood	Tecovas Jasper	Unident. quartzite	Unident. stone	Totals
A. Chipped												
1. Arrowpoints	1	5										6
2. Dartpoints	2	25	1		9	2		2	1	5	2	49
3. Dartpoints or Knives	1	2		1	5			2		2	1	14
4. Knives	2	11			41	2		11		12	8	87
5. Flake knives		1			10	3		2	1	1		18
6. Drills	1									1		2
7. Crude bifaces		9			55	14		16	1	16	13	124
8. Gouges												
a. Bifacial					30	1		3			1	35
b. Unifacial		1			80	12		8	1	10	3	115
9. Turtlebacks												
a. Bifacial		2			4				1	3	2	12
b. Unifacial		1			10						1	12
10. Choppers												
a. Bifacial		1			60	15		1		25	6	108
b. Unifacial					33	6		1		16		56
11. Chipped pebbles												
a. Bifacial		1	7		3	4		17		12	13	57
b. Unifacial		1	15		8	2		14		14	20	74
12. Unclass. frags.												
a. Bifacial		2			2			2		1	1	8

a. Bifacial	1	10			1	12
b. Unifacial						
10. Choppers						
a. Bifacial	1	60	15	1	25	6 108
b. Unifacial		33	6	1	16	56
11. Chipped pebbles						
a. Bifacial	1	3	4	17	12	13 57
b. Unifacial	1	8	2	14	14	20 74
12. Unclass. frags.						
a. Bifacial	2	2		2	1	1 8
b. Unifacial			1		1	2
13. Spokeshaves	1	20	15	4	6	1 47
14. Gravers	7	31	5	8	8	9 68
15. Denticulates		4	1		2	7
16. Scrapers						
a. End	2	8			2	2 23
b. Side	4	12	3	2	1	2 24
c. Unclass.	1			2	1	1 5
d. Flake	22	99	53	7	5	47 23 256
17. Retouched flakes	5	279	66	36	4	79 62 584
B. Battered (hammers)						
1. Pebble		72	13	1	22	5 113
2. Discoid		21			3	1 25
3. Unidentified frags.		150	4		9	1 164
C. Worn						
1. Manos						
a. Bifacial		3		2	28	33
b. Unifacial				2	22	24
c. Unidentified frags.		13			55	68
2. Grinding Slab				1		1
3. Unidentified				1	7	8
4. Flakes		6	1		1	8
5. Boatstone				1		1
Totals	15	156	25	1	1052	238
				7	139	16 411 177 2238

1. Arrowpoints (6). Three arrowpoints are assignable to the following types: Alba (1), Scallorn (1), and Talco (1). Not assignable are one nearly complete preform and two blade fragments. Selected measurements for arrowpoints are provided in Table 17. Arrowpoints and/or pottery are indicative of NeoIndian occupation of the region. Arrowpoints are notably rare, not only in our collections, where they comprise 0.36% of the stone tools, but also in collections of local amateurs. Evidently NeoIndian occupancy of the region was very limited. The arrowpoints are from multicomponent Archaic and NeoIndian sites of various kinds.

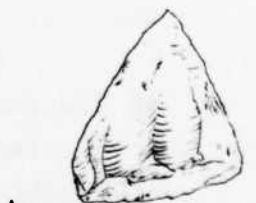
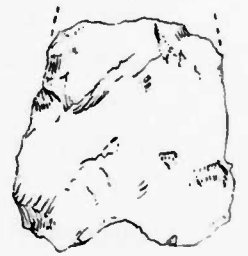
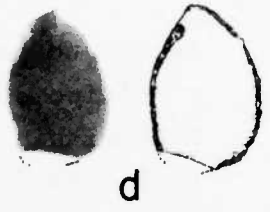
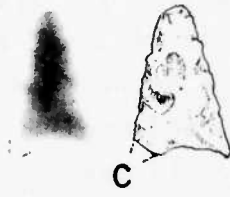
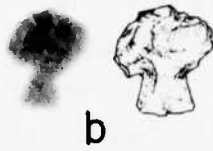
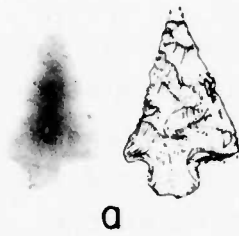
Table 17. Selected measurements of arrowpoints (in mm).

	Neck width	Base width	Shoulder width	Stem width	Blade length	Overall length	Thickness
Alba, 41KX41.41	6	7	17	5	20	25	4
Scallorn, 41KX56.1	6	8	-	6	-	-	3
Talco, 41KX39-1.1	-	15	-	-	-	21	2

a. Alba (1) (Fig. 50a). This is a complete specimen made of Edwards flint. It is from 41KX41, a multicomponent Archaic and NeoIndian camp and workshop within the reservoir. The Alba type (Suhm and Jelks 1962:263) is found in eastern Texas and adjacent areas, southward to the coastal plain, and westward with decreasing frequency into north-central and central Texas. It also occurs in eastern Oklahoma. The estimated age, based on radiocarbon dates (Bell 1958:8), is 700-800 A.D. up to 1300-1400 A.D. The Alba point is a major type of the Alto Focus, occurs in the Henrietta and other Neo-Indian foci, and may occur in the East Texas Aspect of the Archaic Stage shortly before pottery appears in the area.

Figure 50. Arrowpoints and dartpoints. Full size.

- a. Alba arrowpoint, 41KX41.41, Edwards flint.
- b. Scallorn arrowpoint, 41KX56.1, Edwards flint.
- c. Talco arrowpoint, 41KX39-1.1, Edwards flint.
- d. Arrowpoint preform, 41KX26.91, Edwards flint.
- e. Bulverde dartpoint, 41KX47.2, Edwards flint.
- f. Carrizo dartpoint, 41KX50-47.1, Potter chert.
- g. Castroville dartpoint, 41KX56.4, Edwards flint.
- h. Catan dartpoint, 41KX2-371.1, quartzite.
- i. Darl dartpoint, 41KX78.1, Edwards flint.
- j. Darl dartpoint, 41KX64.2, Edwards flint.
- k. Desmuke dartpoint, 41KX5-110.1, milky quartz.



b. Scallorn (1) (Fig. 50b). This specimen is Edwards flint and has the tips and barbs missing. It is from 41KX56, a multicomponent Archaic and NeoIndian specialized processing site within the reservoir. The Scallorn type (Suhm and Jelks 1962:285) occurs in most of Texas but is absent in eastern Texas and the eastern and southern extremities of the coast. It occurs in most sections of Oklahoma, and similar forms are found in most of the Mississippi Valley region. The estimated age is about 500-1200 A.D. Cultural affiliations are with the Central Texas Aspect, where it is common, and with the Henrietta Focus, the Gibson and Fulton Aspects, and the Washita River Focus.

c. Talco (1) (Fig. 50c). This is a nearly complete specimen of Edwards flint. It is from 41KX39, a small Archaic and NeoIndian camp within the reservoir. The Talco type (Suhm and Jelks 1962:289) occurs in the northern part of eastern Texas and across the Red River into Oklahoma, particularly the southeastern part of the state. The estimated age is about 900-1800 A.D. Cultural affiliations are with the Fulton Aspect, where it is especially common in the Titus Focus.

d. Preform (1) (Fig. 50d). This is a complete specimen of Edwards flint. It is from 41KX26, a NeoIndian camp outside the project area. It is a very thin, curved trianguloid point with unifacial retouch on nearly all parts of the lateral and basal edges.

e. Unidentifiable fragments (2). One of these is a blade fragment of Alibates agate, and is from 41KX68. The other is a blade fragment of Edwards flint from 41KX21. Both of these sites are multicomponent Archaic and NeoIndian camps.

2. Dartpoints (49). Thirty-five dartpoints are referred to the following types: Bulverde (1), Carrizo (1), Castroville (1), Catan (1), Darl (2), Desmuke (1), Elam (2), Ellis (4), Frio (1), Kent (1), cf. Lange (2), cf. Marcos (3), cf. McKean (1), Palmillas (1), Pedernales (3), Trinity (4), Wells (1), Williams (4), and Yarbrough (1). Not assignable are three

small corner-notched specimens for which no comparable type is known, two preforms, and nine unidentifiable fragments. Selected measurements for dartpoints are provided in Table 18.

Since no stratified sites were located, and radiocarbon dates and climatological data are not available, dartpoints are the only feasible means of attempting to establish an Archaic culture sequence for the reservoir area. There are many Archaic sites, but dartpoints are scarce at most of them, and it is fortunate that a highly variable series was collected. It is hoped that the numerous dartpoints in local collections may be thoroughly studied in the near future. Such a study would be a valuable contribution to the archeology of this little-known region.

A postulated tentative sequence of Archaic substages for the Rolling Plains is provided in Table 6. The sequence is based on data from better known Texas sequences, mainly that of Weir (1976a) for the central Texas Archaic.

Of the stone tools, 2.96% are dartpoints. They were found at 16 different sites that are single or multicomponent camps, workshops, or special processing sites, or are isolated finds from inside and outside of the reservoir and project area.

a. Bulverde (1) (Fig. 50e). This is a nearly complete specimen of Edwards flint. It is from 41KX47, a multicomponent camp within the reservoir. The flint is deeply patinated, which suggests that the point is of considerable age. The point is atypical in that the stem has been notched. The Bulverde type (Suhm and Jelks 1962:19) is common in central Texas, and less so in adjoining areas. It occurs in parts of Oklahoma and elsewhere (Bell 1960:12). The estimated age is about 2500-1000 B.C. (Weir 1976a:116). Cultural affiliations are with the Edwards Plateau Aspect, and less frequently with adjoining pre-ceramic complexes, from the Pecos River Focus to the East Texas Aspect and to the Aransas Focus on the Texas coast. The Bulverde type occurs in association with pottery in the Alto

Table 18. Selected measurements of dartpoints. (In mm.)

	Neck width	Base width	Shoulder width	Stem width	Blade length	Overall length	Thickness
Bulverde, 41KX47.2	17	17	27	16	18	34	6
Carrizo, 41KX50-47.1	-	30	-	-	-	-	6
Castroville, 41KX56.4	20	26	27	12	35	47	5
Catan, 41KX2-371.1	-	25	-	-	-	28	6
Darl, 41KX78.1	15	16	21	17	-	-	8
Darl, 41KX64.2	13	-	25	-	47	-	7
Desmuke, 41KX5-110.1	-	-	17	-	25	-	7
Elam, 41KX2-254.1	-	12	15	6	23	29	6
Elam, 41KX64.1	17	18	20	13	18	31	6
Ellis, TI-20.1	13	15	23	7	-	-	5
Ellis, 41KX56.2	14	18	-	12	20	32	6
Ellis, 41KX2-958.1	14	-	21	8	22	30	5
Ellis, 41KX55.1	18	-	25	-	30	-	5
Frio, 41KX2-878.1	15	20	22	12	-	-	7
Kent, 41KX57.53	14	11	20	18	35	53	8
Lange, 41KX56.6	19	-	27	12	33	45	7
Lange, 41KX2-564.1	19	22	23	15	18	33	8
Marcos, TI-12.1	13	18	-	10	-	-	5
Marcos, 41KX43.1	14	-	27	8	39	47	7
Marcos, 41KX47.1	13	15	-	10	-	-	5
cf. McKean, 41KX64.3	-	11	16	15	27	42	8
Palmillas, 41KX37-1.1	12	15	25	11	-	-	-
Pedernales, 41KX54.30	19	19	-	14	-	-	9
Pedernales, 41KX56.7	16	18	30	15	-	-	7
Pedernales, 41KX54.33	20	18	-	14	-	-	9
Trinity, 41KX35-199.1	15	12	19	12	21	33	8
Trinity, 41KX42.1	15	17	18	12	33	45	8
Trinity, 41KX35-664.1	16	15	21	12	25	37	10
Trinity, 41KX54.29	15	-	19	-	30	-	9
Wells, 41KX2-896.1	-	13	-	-	-	-	7

Focus in eastern Texas. Bulverde points are closely associated with the Carrollton Focus in the upper Trinity River drainage. They are associated with the Clear Fork and Round Rock phases of central Texas (Weir 1976a:116; Patterson 1977:58), and are tentatively assigned to the Early Substage of the Archaic in the Rolling Plains of Texas (Table 6).

b. Carrizo (1) (Fig. 50f). This is a base fragment of Potter chert. It is from 41KX50, a short-term Archaic camp within the reservoir. The Carrizo type (Perino 1968:16) is concentrated in southwestern Texas, but isolated specimens occur elsewhere as far north as central Texas. The age has not yet been established, but it is found associated with dartpoints such as Ensor and Frio, which are characteristic of the San Marcos and Twin Sisters phases of about 1000 B.C. to 1200 A.D. in central Texas. These phases correspond to the Late and Terminal substages of the Archaic Stage in the Rolling Plains.

c. Castroville (1) (Fig. 50g). This nearly complete specimen is Edwards flint. It is from 41KX56, a multicomponent Archaic and NeoIndian specialized processing site within the reservoir. The Castroville type (Suhm and Jelks 1962:173) is common in central Texas, decreasing toward the north-central area and the central coast. It is also found in Oklahoma and other sections of the Mississippi Valley (Bell 1960:14). The estimated age is from about 1000-0 B.C. Castroville is a major type of the Edwards Plateau Aspect. Associations in Oklahoma are apparently with the Archaic. It is assigned to the San Marcos Phase of central Texas (Weir 1976a:55) which corresponds to the Late Substage of the Archaic Stage in the Rolling Plains.

d. Catan (1) (Fig. 50h). This is a complete specimen of quartzite. It is from 41KX2, a multicomponent Archaic camp within the reservoir. The base and one blade edge are beveled. The Catan type (Suhm and Jelks 1962:175) occurs from southern

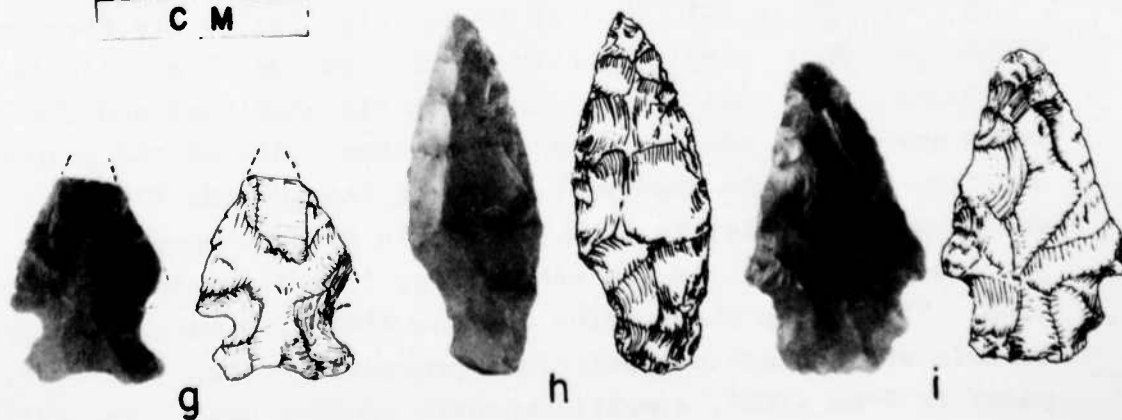
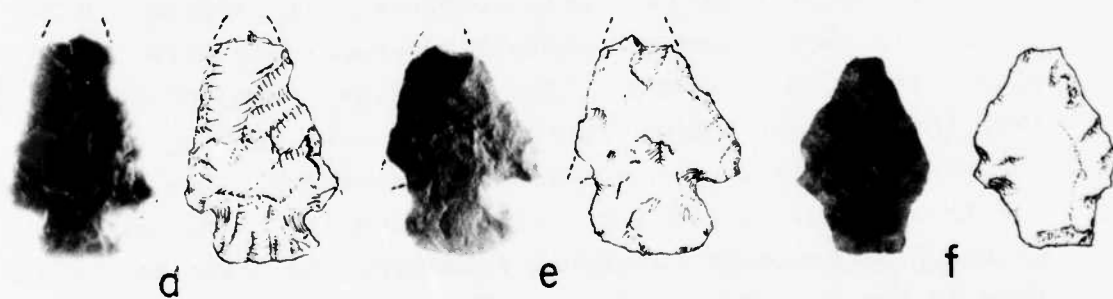
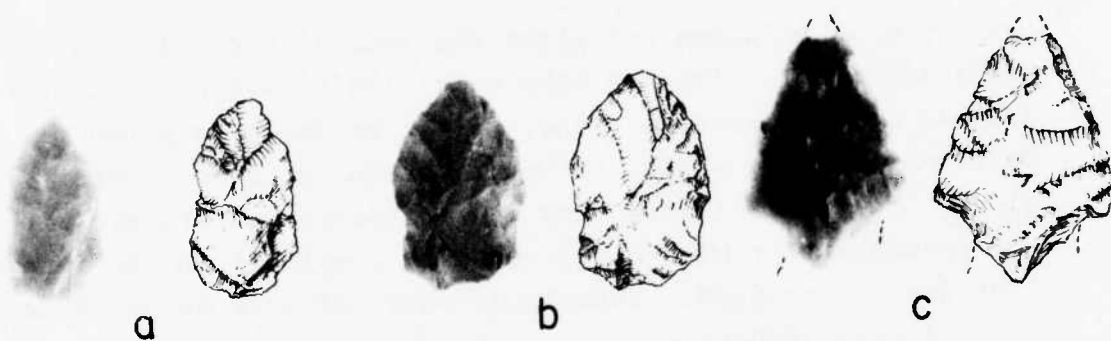
Tamaulipas to the central Gulf coast of Texas, and inland over southwestern Texas. It also occurs in Oklahoma and elsewhere (Bell 1958:14). The estimated age is from perhaps 500 A.D. into the 18th century. Associations are with the Mier, Brownsville, and Rockport foci of Texas. It is assigned to the Terminal Archaic Substage in the Rolling Plains.

e. Darl (2). Both specimens are of Edwards flint. One of them (Fig. 50i) is a stem fragment and is from 4lKX78, a possible multicomponent Archaic specialized processing site outside the project area. The other (Fig. 50j) is nearly complete, with part of the stem missing. The left blade edges of the point are steeply beveled, and the edges have a semi-serrated appearance. It is from 4lKX64, an Archaic short-term or specialized processing site within the reservoir. The Darl type (Suhm and Jelks 1962:179) is common in central Texas and westward to the Pecos River mouth. It is found occasionally in Oklahoma, especially in the western and central sections of the state (Bell 1960:26). The estimated age is from about 0-1200 A.D. Cultural affiliations are with the Archaic Edwards Plateau Aspect and NeolIndian Central Texas Aspect. It is assigned to the Twin Sisters Phase of central Texas (Weir 1976a:56) and to the Terminal Archaic Substage in the Rolling Plains.

f. Desmuke (1) (Fig. 50k). This is a milky quartz point with a small part of the stem missing. It is small, thick, and crudely finished. Much of one face retains the cortex of the pebble from which it was made. It is from 4lKX5, an Archaic specialized processing site on the Pleistocene rim near the dam. The Desmuke type (Suhm and Jelks 1962:181) apparently is most frequent along the middle parts of the Frio and Nueces River valleys, decreasing southward. Many specimens made of white quartzite are found in Duval, McMullen, and probably nearby counties. It is not recognized along most of the Texas coast or in central Texas. Similar shaped points

Figure 51. Dartpoints. Full size.

- a. Elam dartpoint, 41KX2-254.1, Edwards flint.
- b. Elam dartpoint, 41KX64.1, Potter chert.
- c. Ellis dartpoint, 41KX65.1, Edwards flint.
- d. Ellis dartpoint, 41KXTI20.1, Edwards flint.
- e. Ellis dartpoint, 41KX56.2, Potter chert.
- f. Ellis dartpoint, 41KX2-958.1, quartzite.
- g. Frio dartpoint, 41KX2-878.1, Edwards flint.
- h. Kent dartpoint, 41KX57.53, Edwards flint.
- i. Lange dartpoint, 41KX56.6, Edwards flint.



are found in Oklahoma and other sections of the United States (Bell 1960:30). Although Suhm et al (1954) assign it to the Archaic in southwestern Texas, no age estimate is given. Oklahoma examples appear to be associated with non-pottery sites. Cultural affiliations in southwestern Texas are with the Falcon and/or Mier foci, and with complexes in the interior that are not defined. Therefore, this point is not assigned to an Archaic substage.

g. Elam (2). One of these (Fig. 51a) is a complete, thick, small, narrow-bladed point of Edwards flint. It is from 41KX2, a multicomponent Archaic site within the reservoir. The other (Fig. 51b) is a relatively thin, broad-bladed point of Potter chert that is nearly complete. It is from 41KX64, an Archaic short-term or specialized processing site that is also within the reservoir. The Elam type (Suhm and Jelks 1962:185) is most common in the Dallas area, fading out in northeastern Texas, but not abundant anywhere. The estimated age is 500 B.C. to 450 A.D. Elam points are characteristic of the Elam Focus of the Trinity Aspect, and occur as a minor type in the East Texas Aspect. They also occur (McCormick 1976:44) in association with Darl points, which in central Texas are found in the Twin Sisters Phase, dating from about 0-1200 A.D. They are assigned to the Terminal Archaic Substage in the Rolling Plains.

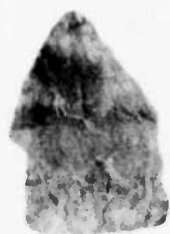
h. Ellis (4). Two of these (Fig. 51c,d) are Edwards flint, one (Fig. 51e) is Potter chert, and one (Fig. 51f) is quartzite. The tips are missing from all specimens and the stems are partly missing from two of them. All of the points are from within the reservoir. One of the Edwards flint specimens (Fig. 51c) is from 41KX65, an Archaic specialized processing site, while the other (Fig. 51d) is an isolated find. The Potter chert point is from 41KX56, a multicomponent Archaic and NeoIndian specialized processing site. The quartzite point is from 41KX2, a multicomponent Archaic camp. The Ellis

type (Suhm and Jelks 1962:187) is widely distributed throughout Texas except for the southwestern section. It commonly occurs in late Archaic contexts on the Llano Estacado and throughout Oklahoma, also being reported from most sections of the Mississippi Basin (Bell 1960:32). The estimated age is from possibly 1000 B.C. or earlier to 500-1000 A.D. Cultural affiliations are probably with late Archaic complexes and into early Woodland complexes, at least in the eastern United States. The Ellis type is not common in any area, but may be of greatest relative frequency in the East Texas Aspect. In eastern Texas it survived in association with pottery into the Alto Focus. The type also occurs in the Trinity Aspect of the upper Trinity River drainage (McCormick 1976:44). Ellis points are also associated with Gary points (Bell 1960:30). While not specifically listed by Weir, the Ellis type is an expanding stem dartpoint of the kind assigned to the central Texas San Marcos Phase of about 1000-0 B.C. Due to its known association with Darl points, it can also be assigned to the Twin Sisters Phase of about 0-1200 A.D. in central Texas. It is considered Late or Terminal Archaic in the Rolling Plains.

i. Frio (1) (Fig. 51g). This is a nearly complete specimen of Edwards flint. It is from 41KX2, a multicomponent Archaic camp within the reservoir. The Frio type (Suhm and Jelks 1962:195) is widespread in central Texas, but apparently most common in the southwestern portion, extending westward to the lower Pecos River or beyond. It is found in Oklahoma, usually in the eastern or central sections, and similar forms occur throughout most of the eastern United States (Bell 1960:48). The estimated age is 100 B.C.-1200 A.D. It is a minor type of the Edwards Plateau Aspect and the Pecos River Focus. Associations in Oklahoma are not clear. It occurs in the San Marcos and Twin Sisters phases of central Texas (Weir 1976a:29), and is considered Late or Terminal Archaic in the Rolling Plains.

Figure 52. Dartpoints. Full size.

- a. Lange dartpoint, 41KX2-564.1, Potter chert.
- b. Marcos dartpoint, 41KXTI-12.1, Edwards flint.
- c. Marcos dartpoint, 41KX43.1, silicified wood.
- d. Marcos dartpoint, 41KX47.1, unidentified stone.
- e. cf. McKean dartpoint, 41KX64.3, Alibates agate.
- f. Palmillas dartpoint, 41KX37-1.1, Edwards flint.
- g. Pedernales dartpoint, 41KX54.30, Edwards flint.



a



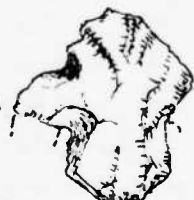
b



c



d



e



g



j. Kent (1) (Fig. 51h). This is a complete specimen of Edwards flint. It is from 41KX57, an Archaic specialized processing site, outside the reservoir, on the rim of the conservation pool. It is made on a curved flake and has a twisted appearance. The Kent type (Suhm and Jelks 1962:199) occurs in the central portion of the coastal area of Texas, northeastward, and northward into central Texas. It also occurs in Oklahoma, especially along the Red River valley in the southeastern section of the state (Bell 1960:60). It is probably relatively late in the Archaic of Texas, and is common in sites of the East Texas Aspect that contain pottery, but is not found associated with pottery in Oklahoma. It is tentatively assigned to the Terminal Archaic Substage of the Rolling Plains.

k. cf. Lange (2). One point (Fig. 51i) is a complete specimen of Edwards flint. It is from 41KX56, a multicomponent Archaic and NeoIndian specialized processing site. The other (Fig. 52a) is a complete, small, resharpened point of Potter chert. It is from 41KX2, a multicomponent Archaic camp. Both points are from within the reservoir. The Lange type (Suhm and Jelks 1962:203) is most common in central Texas, extending into eastern Texas and northwestward into the Plains. It is also found in many parts of Oklahoma, but is most abundant in the eastern sections of the state (Bell 1958:36). The estimated age is 1000-0 B.C. Cultural affiliations are primarily with the Edwards Plateau Aspect, the Aransas Focus on the coast, and toward the plains below the Panhandle. In Oklahoma it appears chiefly in Archaic complexes such as the Fourche Maline Focus. In central Texas it is associated with the San Marcos Phase (Weir 1976a:55). Lange points are tentatively assigned to the Late Archaic Substage of the Rolling Plains.

l. cf. Marcos (3). One of these specimens (Fig. 52b) is Edwards flint, and is an isolated find. One (Fig. 52c) is a nearly complete specimen of silicified wood from 41KX43, an

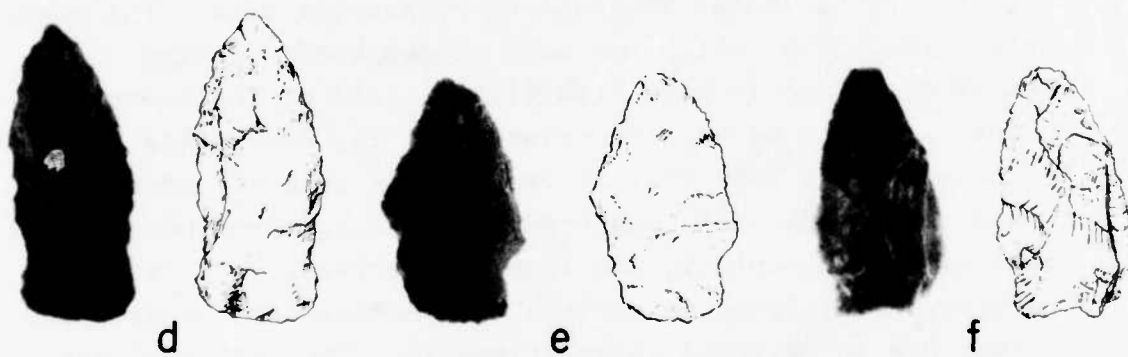
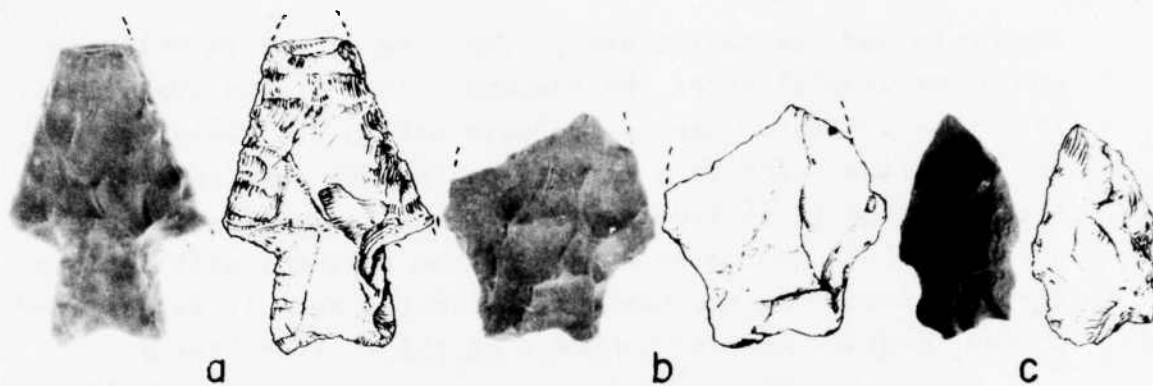
Archaic camp. The other (Fig. 52d) is a heavily damaged point of unidentified stone from 41KX47, a multicomponent Archaic and NeoIndian camp. All of the Marcos points are from within the reservoir. The Marcos type (Suhm and Jelks 1962:209) is found in the Pecos River valley and across central Texas to the middle Brazos River, and also from the upper Brazos area southward to the central coast. It occurs in Oklahoma mainly in the eastern section of the state (Bell 1958:42). The estimated age is about 1000-0 B.C. Marcos points are a minor type of the Edwards Plateau Aspect and the Pecos River Focus. In Oklahoma, cultural affiliations are not clear. It is assigned to the San Marcos Phase in central Texas (Weir 1976a:55), and to the Late Archaic Substage in the Rolling Plains.

m. cf. McKean (1) (Fig. 52e). This is a complete specimen of Alibates agate. It is a thick lanceolate point with one keeled face, slightly sinuous edges, and perhaps a shallow notch in the base. It is from 41KX64, an Archaic short-term camp or specialized processing site within the reservoir. Its presence suggests that the site may be multicomponent. The McKean type (Bell 1958:50) is common in parts of Wyoming, Montana, South Dakota, and Nebraska, but is found over a considerably larger area, including much of the western United States. Examples are occasionally found in Oklahoma, particularly in the western part of the state. Radiocarbon dates suggest an age of about 2000 B.C. Cultural affiliations are not yet established. If the Truscott specimen is a McKean point, it may represent the Middle Archaic Substage in the Rolling Plains.

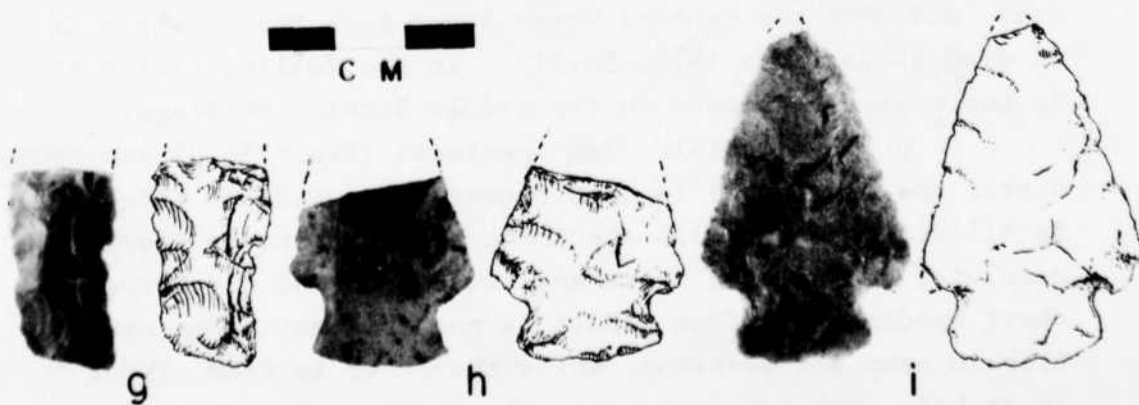
n. Palmillas (1) (Fig. 52f). This is the basal portion of an Edwards flint point. It is from 41KX37, a multicomponent Archaic camp within the reservoir. The Palmillas type (Suhm and Jelks 1962:229) is found in eastern Texas across the state to the Trans-Pecos area, and from the upper Brazos and Trinity valleys to the central and eastern coastal plain. It is not

Figure 53. Dartpoints. Full size.

- a. Pedernales dartpoint, 41KX56.7, Edwards flint.
- b. Pedernales dartpoint, 41KX54.33, Potter chert.
- c. Trinity dartpoint, 41KX35-199.1, Potter chert.
- d. Trinity dartpoint, 41KX42.1, Potter chert.
- e. Trinity dartpoint, 41KX35-664.1, purple quartzite.
- f. Trinity dartpoint, 41KX54.29, silicified wood.
- g. Wells dartpoint, 41KX2-896.1, Edwards flint.
- h. cf. Williams dartpoint, 41KX35-283.1, Tecovas jasper.
- i. cf. Williams dartpoint, 41KX56.3, quartzite.



C M



common in any particular area. The type occurs in Oklahoma and other localities of the eastern United States (Bell 1960: 74). The estimated age is probably within the Christian era. The Palmillas point is a minor type in most complexes of the Archaic stage in various parts of Texas, surviving in some areas into the NeoIndian Stage. Other cultural affiliations are not known. On the basis of estimated age, it is assigned to the Terminal Archaic Substage of the Rolling Plains.

o. Pedernales (3). Two specimens are Edwards flint and have the tips and part of the barbs missing. One of these (Fig. 52g) is from 41KX54, an Archaic specialized processing site, while the other (Fig. 53a) is from 41KX56, a multicomponent Archaic and NeoIndian specialized processing site. The other point (Fig. 53b), which has most of the blade missing, is Potter chert and is also from 41KX54. All of the Pedernales points are from within the reservoir. The Pedernales type (Suhm and Jelks 1962:235) is very common over all of central Texas, extending much less commonly into adjacent portions of coastal, north-central, and Trans-Pecos Texas. It is never or very rarely found in eastern and southwestern Texas. The occurrence in Oklahoma is questionable. The estimated age is from 2000-1000 B.C. Cultural affiliations are with the Edwards Plateau Aspect, where it is the most common type of dartpoint; with the Pecos River Focus, where it is a minor type; and with the central Texas Round Rock Phase, where it is diagnostic (Weir 1976a:50-51). In the Rolling Plains it is tentatively assigned to the Middle Archaic Substage.

p. Trinity (4). Two specimens (Fig. 53c,d) are Potter chert, one (Fig. 53e) is purple quartzite, and one (Fig. 53f) is silicified wood. All specimens are complete or nearly complete, and all are thick and crude. One of the Potter chert specimens is from 41KX35, a possible multicomponent Archaic camp and workshop, while the other is from 41KX42, an Archaic camp and workshop. The purple quartzite point

is from 41KX35, and the silicified wood point is from 41KX54, an Archaic specialized processing site. All of the points are from within the reservoir. The Trinity type (Suhm and Jelks 1962:253) apparently is most common in the Dallas area in the upper Trinity River drainage, extending into northeastern Texas and southward toward the Brazos River. It occurs in Oklahoma, appearing to be most common in the Lake Texoma region of the Red River (Bell 1958:96). It is a major type of the Carrollton Focus of the Dallas area. The estimated age is 2000-1000 B.C. In the Carrollton Focus, Trinity points are found associated with Castroville points. The latter type is assigned to the San Marcos Phase of central Texas (Weir 1976a:55). Cultural affiliations are not established in Oklahoma. In the Rolling Plains, Trinity points are assigned to the Late Archaic Substage.

q. Wells (1) (Fig. 53g). This is a stem fragment of Edwards flint. It is from 41KX2, a multicomponent Archaic camp within the reservoir. The Wells type (Suhm and Jelks 1962:257) occurs in the central part of eastern Texas, extending westward into central Texas. It is occasionally found in Oklahoma, particularly in the middle part of the Red River valley (Bell 1958:100). Wells points are rare in northwestern Texas. The estimated age is about 3000-2000 B.C. Cultural affiliations are primarily with the East Texas Aspect, surviving into the Alto Focus, where they are associated with pottery. Wells points occur infrequently in the Edwards Plateau Aspect. In central Texas they are assigned to the Clear Fork Phase (Weir 1976a:53). In the Rolling Plains they are assigned to the Early Archaic Substage.

r. cf. Williams (4). One of these (Fig. 53h) is Tecovas jasper, two (Fig. 53i; Fig. 54a) are quartzite, and one (Fig. 54b) is unidentified stone. One of the quartzite specimens is nearly complete, lacking only the extreme tip. The other three specimens are basal portions of points. The Tecovas jasper point is from 41KX35, a possible multicomponent

Figure 54. Dartpoints. Full size.

- a. cf. Williams dartpoint, 41KX56.5, quartzite.
- b. cf. Williams dartpoint, 41KG14.31, unidentified stone.
- c. Yarbrough dartpoint, 41KX46.1, Potter chert.
- d. Small corner-notched dartpoint, 41KX34.15, Alibates agate.
- e. Small corner-notched dartpoint, 41KX54.28, Edwards flint.
- f. Small corner-notched dartpoint, 41KX54-32.1, unidentified stone.
- g. Dartpoint preform, 41KX37-303.1, Potter chert.
- h. Dartpoint preform, 41KX56.10, quartzite.



a



b



c



d



e



f



g



h



Archaic camp and workshop within the reservoir. The quartzite specimens are from 41KX56, a multicomponent Archaic and Neo-Indian specialized processing site, also within the reservoir. The point of unidentified stone is from 41KG14, a small Archaic camp or specialized processing site in the pipeline right-of-way. The Williams type (Suhm and Jelks 1962:259) is common in central Texas, extending infrequently into eastern and coastal areas. It occurs in Oklahoma, especially in the western sections of the state, and is also represented in other parts of the Mississippi Valley (Bell 1960:96). The estimated age is 1000-0 B.C. The Williams point is a major type of the Edwards Plateau Aspect in Texas, and is associated with non-pottery sites in Oklahoma. It is assigned to the San Marcos Phase in central Texas, and to the Late Archaic Substage in the Rolling Plains.

s. Yarbrough (1) (Fig. 54c). This is a tipless specimen of Potter chert. It is from 41KX46, an Archaic short-term camp within the reservoir. The Yarbrough type (Suhm and Jelks 1962:261) is common in eastern Texas, decreasing toward the west in north-central and central Texas. It occurs in Oklahoma and is most common in the southern and eastern sections of the state (Bell 1960:98). The estimated age is possibly 500 B.C. to 1000 A.D. The Yarbrough point is a major type of the East Texas Aspect, continuing into association with pottery in the Alto Focus. It occurs in the Elam Focus of the upper Trinity River drainage (McCormick 1976:44). Cultural affiliations in Oklahoma are not known. It is assigned to the Terminal Archaic Substage of the Rolling Plains.

t. Small corner-notched (3). One point (Fig. 54d) is Alibates agate and is from 41KX34, a short term Archaic camp. One (Fig. 54e) is Edwards flint and is from 41KX54, an Archaic specialized processing site. The other (Fig. 54f) is of unidentified stone and is also from 41KX54. All of these points are from within the reservoir. The tips are missing from all three specimens, and parts of the barbs are missing from two

points. They are thin, finely worked, relatively small points that probably represent the Terminal Archaic Substage.

u. Preforms (2). One (Fig. 54g) is Potter chert and is an irregularly-shaped flake fragment with considerable facial work and minimal edge retouch. It is from 41KX37, a multicomponent Archaic camp. The other (Fig. 54h) is quartzite and is unifacially retouched to produce a leaf-shaped blade. The base is unworked. It is from 41KX56, a multicomponent Archaic and NeoIndian specialized processing site. Both sites are within the reservoir.

v. Unidentifiable fragments (9). These are three tip, three blade, one edge, and one stem fragment of Edwards flint, and one base fragment of Potter chert.

3. Dartpoints or knives (14) (Fig. 55a). These are Alibates agate (1), Edwards flint (2), obsidian (1), Potter chert (5), silicified wood (2), unidentified quartzite (2), and unidentified stone (1). The Alibates agate, obsidian, and unidentified quartzite items are tip fragments. The Edwards flint and unidentified stone items are blade fragments. Of the Potter chert items, three are tips, one is a blade, and one is a base fragment. These are fragments which could represent either dartpoints or knives. They constitute 0.85% of the stone tools (Table 15) and were recovered from many types of sites both inside and outside the reservoir (Table 14). The obsidian specimen (Fig. 55a) is of special interest because it is one of only two obsidian items recovered. Although obsidian items in this region are usually NeoIndian, this is a crude thick specimen suggestive of Archaic affiliation, and was found at a site (41KX47) that contained no diagnostic NeoIndian artifacts, but did yield Archaic tools, including dartpoints and gouges.

4. Knives (87) (Fig. 55b-g). These are Alibates agate (2), Edwards flint (11), Potter chert (41), purple quartzite (2), silicified wood (11), unidentified quartzite (12), and

Figure 55. Dartpoint or knife, and knives. Full size.

- a. Dartpoint or knife, 41KX47.3, obsidian.
- b. Knife, 41KX44-3.2, Alibates agate.
- c. Knife, 41KX40-1.2, Potter chert.
- d. Knife, 41KX50-71.1, Potter chert.
- e. Knife, 41KX78.4, Potter chert.
- f. Knife, 41KX40-3.1, Potter chert.
- g. Knife, 41KX6-57.1, silicified wood.



g



C M



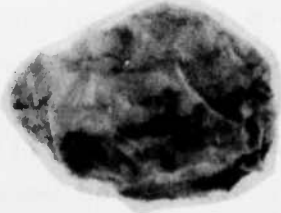
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b



a



e

unidentified stone (8). Approximately 80% of the specimens are incomplete. Of these, nearly half are base fragments, while the remainder are tip, blade, and edge fragments in approximately equal numbers. Of the complete or nearly complete specimens, some are ovate or rectanguloid, but most are lanceolate and relatively small, with average dimensions of about 50mm x 30mm x 10mm. They are mainly of Potter chert, but most of the common lithic types are represented.

Form and quality of workmanship vary considerably. For instance, one large knife (Fig. 55f) is lanceolate, thin, and finely finished, with dimensions 93mm x 39mm x 12mm, while another large specimen (Fig. 55g) is discoidal, crudely made, and measures 75mm x 67mm x 31mm. Knives came from many kinds of sites (Tables 5,14) but the thinnest, finest specimens (Fig. 55c,d) are from short-term camps with few tools (41KX40, 41KX50), and from a multicomponent Archaic and NeoIndian site (41KX56) with many tools, including seven dartpoints.

Knives are a common tool in Archaic and NeoIndian sites of the region. The Archaic specimens tend to be trianguloid or ovate in outline, while the NeoIndian knives often are thin and leaf-shaped, or may be diamond-shaped four-beveled forms. None of the latter type was found in the project area, which suggests very limited NeoIndian occupation locally. At 5.26% of the stone tools (Table 15), knives are relatively scarce, and this low incidence suggests that hunting perhaps was not an important subsistence activity.

5. Flake knives (18). These are Edwards flint (1), Potter chert (10), purple quartzite (3), silicified wood (2), Tecovas jasper (1), and unidentified quartzite (1). Flake knives are flakes with bifacial retouch or damage along one or more straight or convex edges. They are of various sizes and thicknesses, and at 1.09% (Table 15), they constitute a very small percentage of the stone tools. Flake knives are from all types of sites, but are particularly frequent at 41KX2 and 41KX3, which are specialized processing sites (Tables 5,14).

6. Drills (2). One specimen (Fig. 56a) is a bit fragment of burned Alibates agate from 4lKX2, an Archaic multicomponent site within the reservoir. The other (Fig. 56b) is an incomplete key-shaped drill of unidentified quartzite from 4lKX35, a Late Archaic camp and workshop. Drills are a common tool in both Archaic and NeoIndian complexes of the region. They are notable for their scarcity in the study area, comprising only 0.12% of the stone tools. The possible significance of their near absence is unknown, unless minimal hide working is implied.

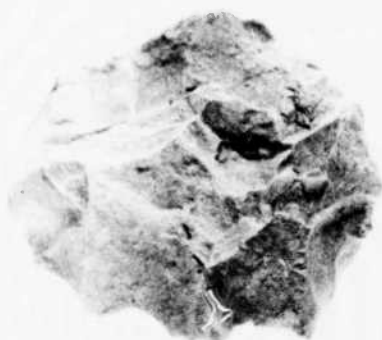
7. Crude bifaces (124) (Fig. 56c-f). These are Edwards flint (9), Potter chert (55), purple quartzite (14), silicified wood (16), Tecovas jasper (1), unidentified quartzite (16), and unidentified stone (13). A number of the specimens are incomplete. These are thick percussion-flaked artifacts of various sizes, usually oval, but sometimes circular in outline. They may represent preforms, choppers, or cores. Crude bifaces constitute 7.50% of the stone tools. This tool class commonly occurs in archeological sites of the region, and was found at most types of sites in the project area (Tables 5,14).

8. Gouges (150) (Figs. 56-63). On the basis of form, these are bifacial (35) and unifacial (115). One is Edwards flint, 110 are Potter chert, 13 are purple quartzite, 11 are silicified wood, 1 is Tecovas jasper, 10 are unidentified quartzite and 4 are unidentified stone. It is apparent that Potter chert and quartzite, both of which are hard, but not brittle, are the preferred lithic materials. The preference for Potter chert for gouges is well known regionally; a preference for quartzite has been noted for other areas (Hester et al 1973:95).

The possible function of gouges has long been speculated on by archeologists. In recent years, analyses of wear patterns have led some authors (Hester et al 1973; Howard 1973; Chandler 1974) to favor the hypothesis that they were used for wood-working, while others (Shiner 1975) suggest their use for

Figure 56. Drills, crude bifaces, and gouge. Full size.

- a. Drill, 41KX2-694.1, Alibates agate.
- b. Drill, 41KX35-83.1, quartzite.
- c. Crude biface, 41KX3-38.2, purple quartzite.
- d. Crude biface, 41KX35-203.2, Potter chert.
- e. Crude biface, 41KX40-6.1, silicified wood.
- f. Crude biface, 41KX35-33.1, quartzite.
- g. Bifacial gouge, 41KX5-274.1, silicified wood.



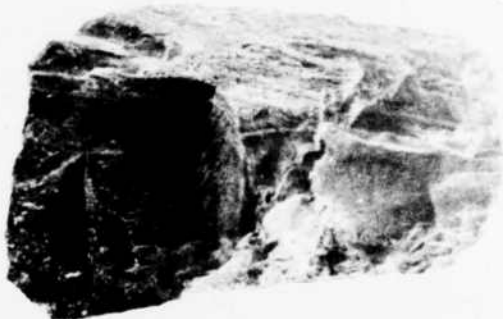
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g



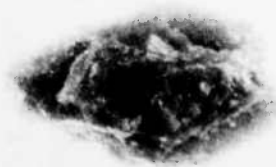
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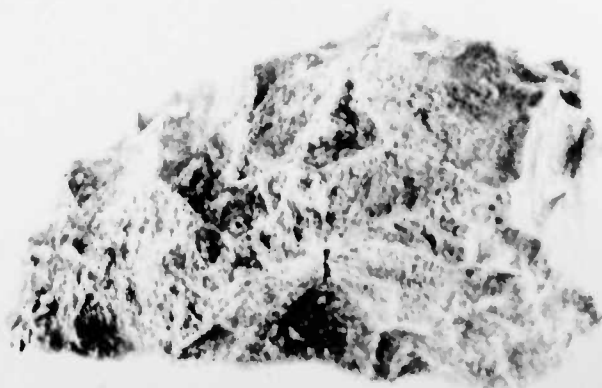
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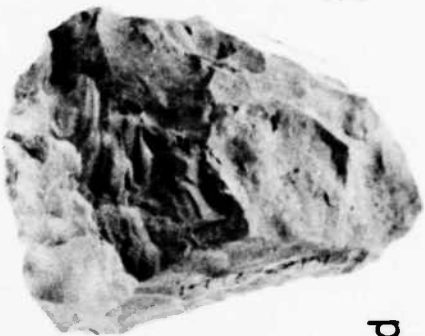


e

Figure 57. Gouges. Full size.

- a. Bifacial gouge, 4lKX37-118.1, Potter chert.
- b. Bifacial gouge, 4lKX47.17, Potter chert.
- c. Bifacial gouge, 4lKX42.11, Potter chert.
- d. Bifacial gouge, 4lKX2-921.1, Potter chert.

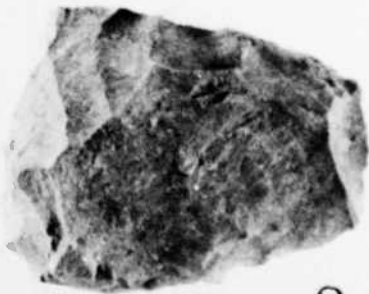
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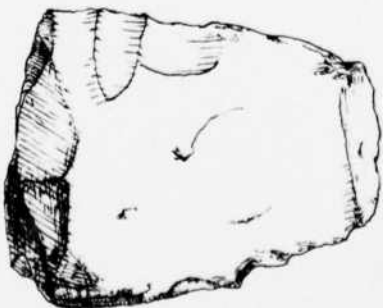
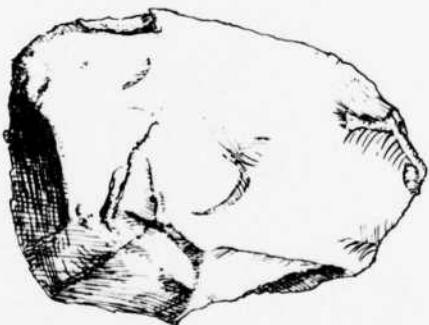
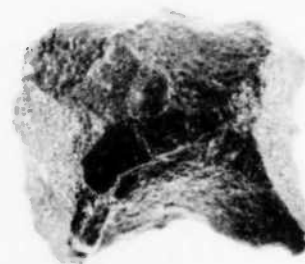
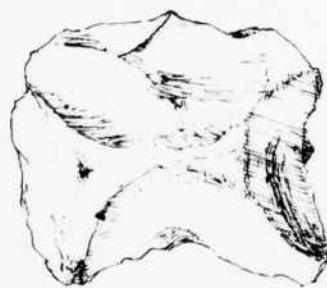
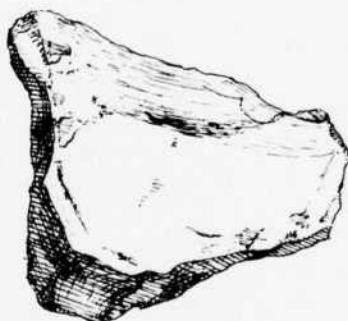


Figure 58. Gouges. Full size.

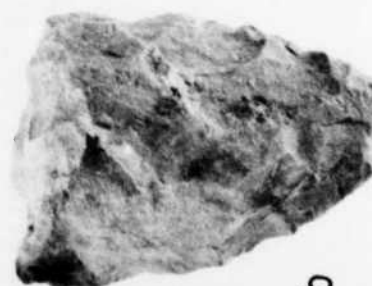
- a. Bifacial gouge, 41KX37-308.1, Potter chert.
- b. Bifacial gouge, 41KX35-682.1, Potter chert.
- c. Unifacial gouge, 41KX79.5, unidentified stone.
- d. Unifacial gouge, 41KX3-41.2, purple quartzite.



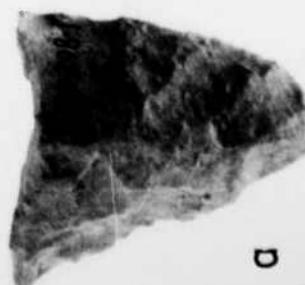
a



c



b



a

Figure 59. Gouges. Full size.

- a. Bifacial gouge, 4lKX56.38, Potter chert.
- b. Unifacial gouge, 4lKX69.2, Potter chert.
- c. Unifacial gouge, A1544-1, Potter chert.
- d. Unifacial gouge, 4lKX2-567.1, Potter chert.

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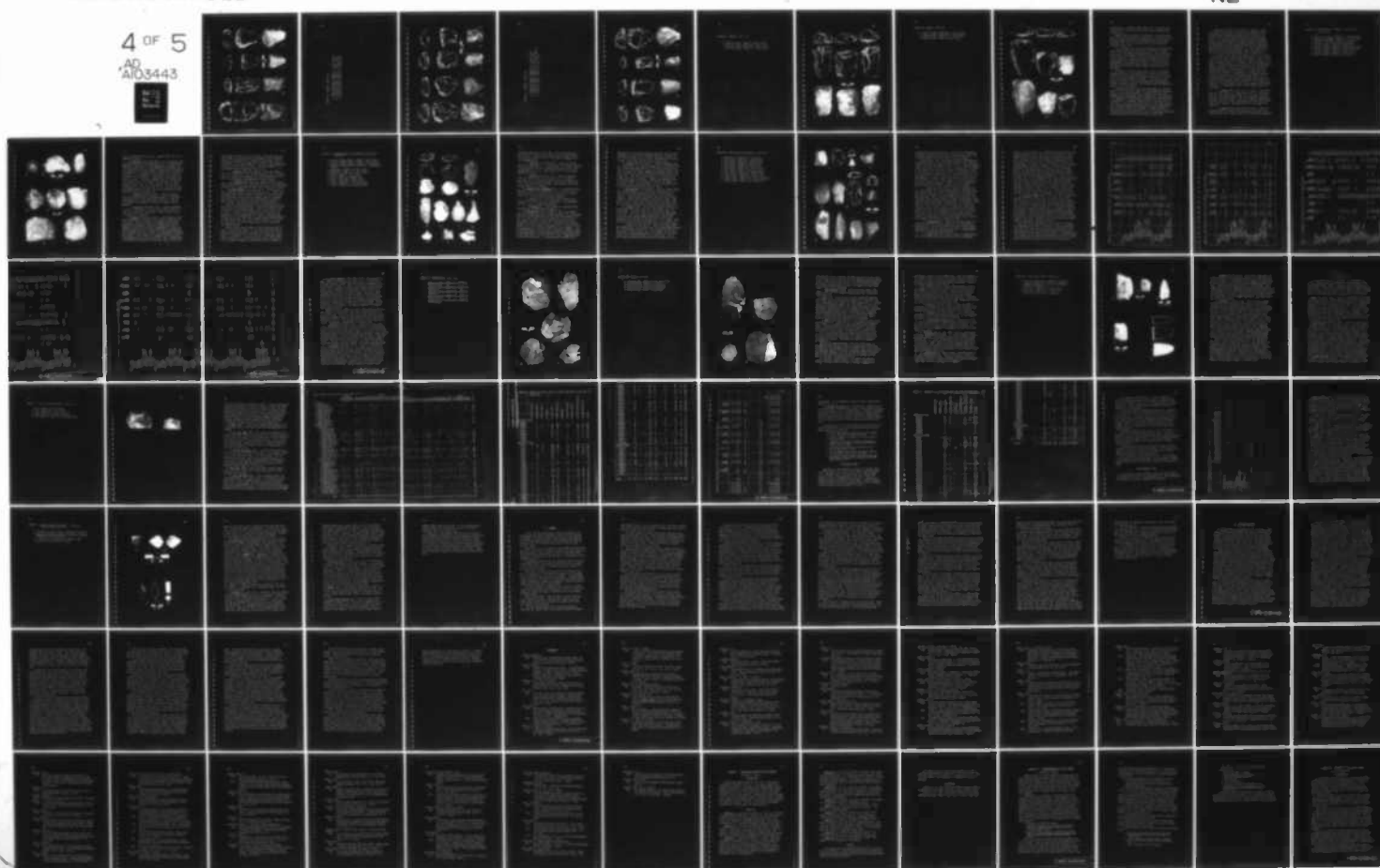
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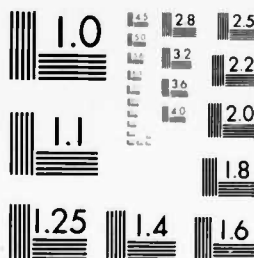
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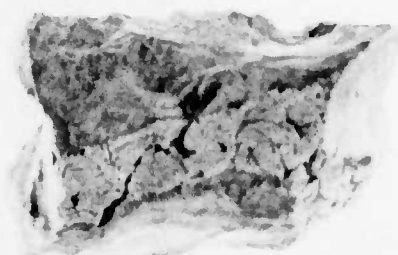
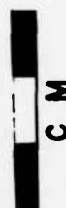
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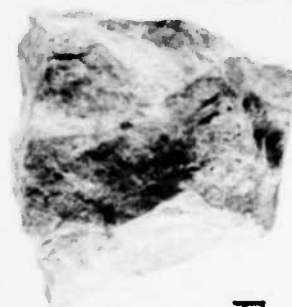
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Figure 60. Gouges. Full size.

- a. Bifacial gouge, 4lKX40-1.4, Potter chert.
- b. Unifacial gouge, 4lKX79.9, Potter chert.
- c. Unifacial gouge, 4lKX59.1, Potter chert.
- d. Bifacial gouge, 4lKX2-332.1, Potter chert.

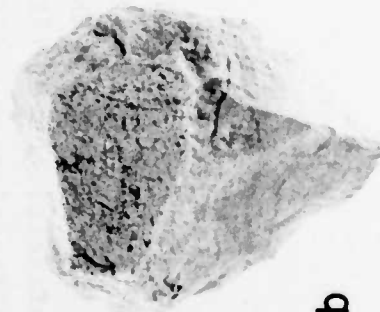
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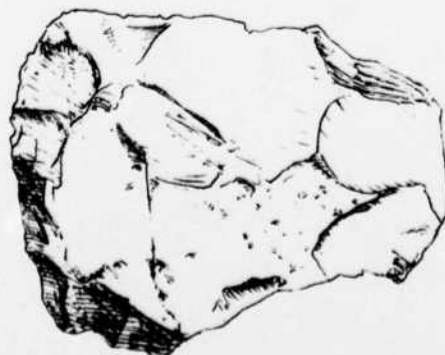
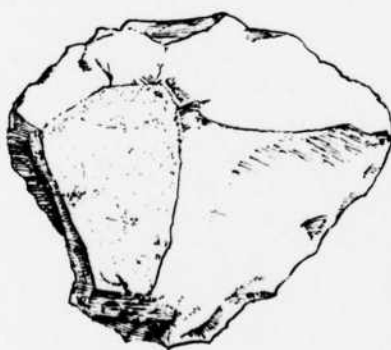
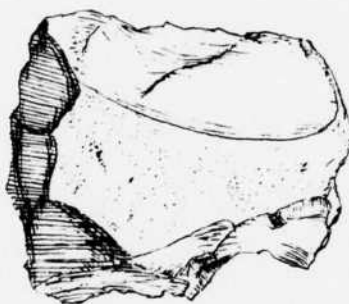


Figure 61. Gouges. Full size.

- a. Unifacial gouge, 41KX2-912.1, Potter chert.
- b. Unifacial gouge, 41KX68.19, Potter chert.
- c. Unifacial gouge, 41KXTI-24.1, Tecovas jasper.
- d. Unifacial gouge, 41KX54.5, Potter chert.

283



d



c



C M



b



a

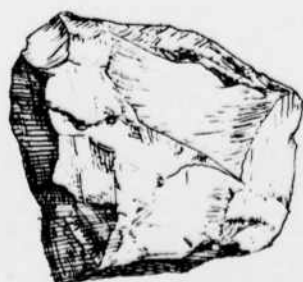
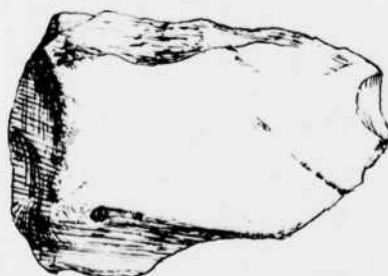
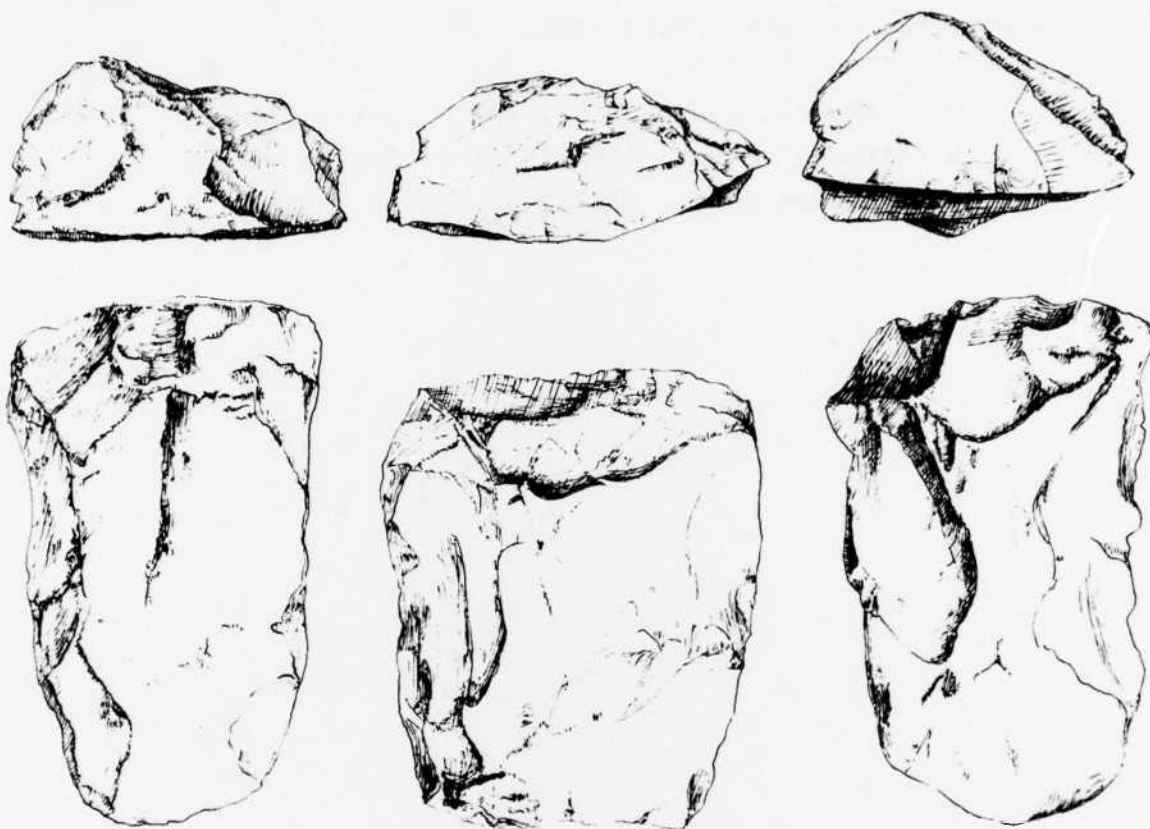


Figure 62. Gouges. Full size.

- a. Unifacial gouge, 41KX54.45, Potter chert.
- b. Unifacial gouge, 41KX2-386.1, Potter chert.
- c. Unifacial gouge, 41KXT1-11.1, Potter chert.



a



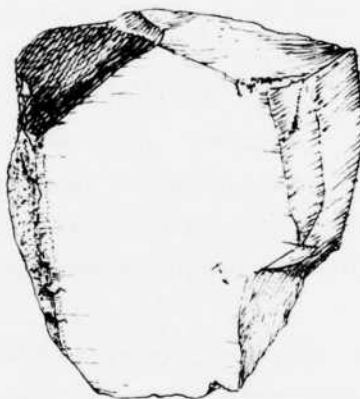
b



c

Figure 63. Gouges. Full size.

- a. Unifacial gouge, 41KX2-466.1, Potter chert.
- b. Bifacial gouge, 41KX37-361.1, Potter chert.
- c. Bifacial gouge, 41KX55.7, Potter chert.



a



b



c

hide-working. At present, there seems to be a trend toward acceptance of the idea that they are at least primarily wood-working tools.

Gouges, whether bifacial or unifacial, are plano-convex tools that are characterized by wedge-like or chisel-like bits. They may resemble scrapers with bifacial work on the faces and edges (Fig. 57a), or preforms which have minimal edge alteration (Fig. 63c).

It is possible that the cruder varieties are wood-cutting tools that were hafted in mounts such as T-mounts (Howard 1973:53-58). When examined macroscopically, these specimens show little of the edge alteration to be expected with this short of hafting. However, microscopic examination reveals the presence of a considerable amount of step-flaking (or chattering or nibbling) on many items. Whether the hafting process or some other activity produced the alteration is not known.

The smaller, thinner, more refined tools may represent gouges that evolved into scrapers as a result of attrition associated with an original chopping or cutting use, or they may be an Archaic variety of scraper. Tools such as these frequently exhibit extensive step-flaking along the edges. Clearly, further studies are indicated for this characteristic Archaic tool of the region.

The gouges from the study area vary greatly in size and shape, but all fall well within the broad range of Clear Fork gouges as defined by Ray (1941). Maximum sizes vary from 35-85mm long, 25-60mm wide, and 13-22mm thick. Most specimens are trianguloid or trapezoidal in outline, but some are ovate, rectanguloid, or squarish. Some items (Fig. 58) have one or more beaks, usually at the end of the bit. The edges and bits of the gouges generally are straight or slightly convex, but may be concave, convex, or straight. Often some cortex is retained on the dorsal face (Fig. 59b); occasionally the ventral surface retains some or all of the cortex (Fig. 62g).

According to Hester et al (1973:90), "gouges ...have a wide spatial distribution in Texas and northeastern Mexico, with perhaps the greatest concentrations occurring in the Abilene area of north-central Texas and on the Rio Grande Plain. It is believed that this tool form had its temporal origins during the terminal Pleistocene (Epstein 1969:120), yet persisted in southern Texas through the Late Prehistoric period (Nunley and Hester 1966:241)." In the Staked Plains they occur in the late PaleoIndian Stage, but appear to be typical of early and middle Archaic sites (Hughes 1975).

In the study area, 42% of the gouges are from only three of the Archaic sites: 41KX2, 41KX3, and 41KX37. The two former sites are specialized processing sites, while the latter is a camp or workshop (Table 5). At 41KX2, numerous dartpoint types suggest cultural affiliations with Early, Late, and Terminal Archaic substages. There are no dartpoints from 41KX3 and cultural affiliations are uncertain. At 41KX37, the only identifiable dartpoint is considered to be Terminal Archaic. Of the 33 other sites that contained gouges (Table 14), 15 produced dartpoints that have cultural affiliations with the Initial through Terminal Archaic substages. The frequency of gouges is relatively high at 9.07%, which suggests that Archaic occupancy is a significant feature of the culture history of the region.

a. Bifacial (35) (Figs. 56g, 57, 58a,b). These specimens are Potter chert (30), purple quartzite (1), silicified wood (3), and unidentified stone (1). As a group, these are relatively "refined" gouges. They often exhibit considerable edge and facial alteration, and probably some are made on other tools such as knives. Approximately 23% of the gouges are bifacial.

b. Unifacial (115) (Figs. 58c,d, 59-63). These are Edwards flint (1), Potter chert (80), purple quartzite (12), silicified wood (8), Tecovas jasper (1), unidentified quartzite

Figure 64. Turtlebacks and choppers. a-c full size;
d-h 3/4 size.

- a. Bifacial turtleback, 41KX5-239.2, Tecovas jasper.
- b. Unifacial turtleback, 41KX40-2.1, Potter chert.
- c. Unifacial turtleback, 41KX64.6, quartzite.
- d. Bifacial chopper, 41KG10.8, Potter chert.
- e. Bifacial chopper, 41KX79.20, unidentified stone.
- f. Bifacial chopper, 41KG14.27, purple quartzite.
- g. Bifacial chopper, 41KX68.11, Potter chert.
- h. Bifacial chopper, 41KG16.4, Potter chert.



(10), and unidentified stone (3). Approximately 77% of the gouges are unifacial.

9. Turtlebacks (24) (Fig. 64a-c). On the basis of form these are bifacial (12) and unifacial (12). Turtlebacks are defined as thick flakes, or end fragments of pebbles, that have been modified so as to produce a distinctly plano-convex tool suggestive of a turtle shell. Chipping may be slight or extensive. Most specimens are sub-circular, but a few are trianguloid or rectanguloid. Turtlebacks occasionally have beaks or notches. They more commonly occur in Archaic than in NeoIndian sites of the region, but are found in small numbers at many sites. In the study area they are scarce, comprising only 1.45% of the stone tools. Turtlebacks come from numerous kinds of sites, but no site produced a concentration of this scarce tool class.

a. Bifacial (12) (Fig. 64a). These are Edwards flint (2), Potter chert (4), Tecovas jasper (1), unidentified quartzite (3), and unidentified stone (2). Most of the specimens are complete. Of the turtlebacks, 50% are bifacial.

b. Unifacial (12) (Fig. 64b,c). These are Edwards flint (1), Potter chert (10), and unidentified stone (1). Many of the specimens are complete. Fifty percent of the turtlebacks are unifacial.

10. Choppers (164) (Fig. 64d-h). On the basis of form, these specimens are subdivided into bifacial (108) and unifacial (56). They are pebbles or fragments with an edge sharpened by percussion flaking and damaged from use in chopping. They may be complete or fragmentary, and are of various shapes and sizes, ranging from small and spheroidal as in modified cores (Fig. 64d,e), to rectanguloid and tabular (Fig. 64f,g). Most examples are roughly circular or ovate, of intermediate size, and are relatively flat. Chipping and battering may be evidenced on the sides, ends, or both. As

with gouges and other tools that appear to have had heavy use, Potter chert and quartzite are the preferred lithic materials. Choppers are a common tool in Archaic and NeoIndian sites of the region, and are also common in the project area, comprising 9.92% of the stone tools by class. They do not appear to be affiliated with any particular type of site.

a. Bifacial (108) (Fig. 64d-g). These are Edwards flint (1), Potter chert (60), purple quartzite (15), silicified wood (1), unidentified quartzite (25), and unidentified stone (6). Of the choppers, approximately 66% are bifacial.

b. Unifacial (56) (Fig. 64h). These are Potter chert (33), purple quartzite (6), silicified wood (1), and unidentified quartzite (16). Approximately 34% of the choppers are unifacial.

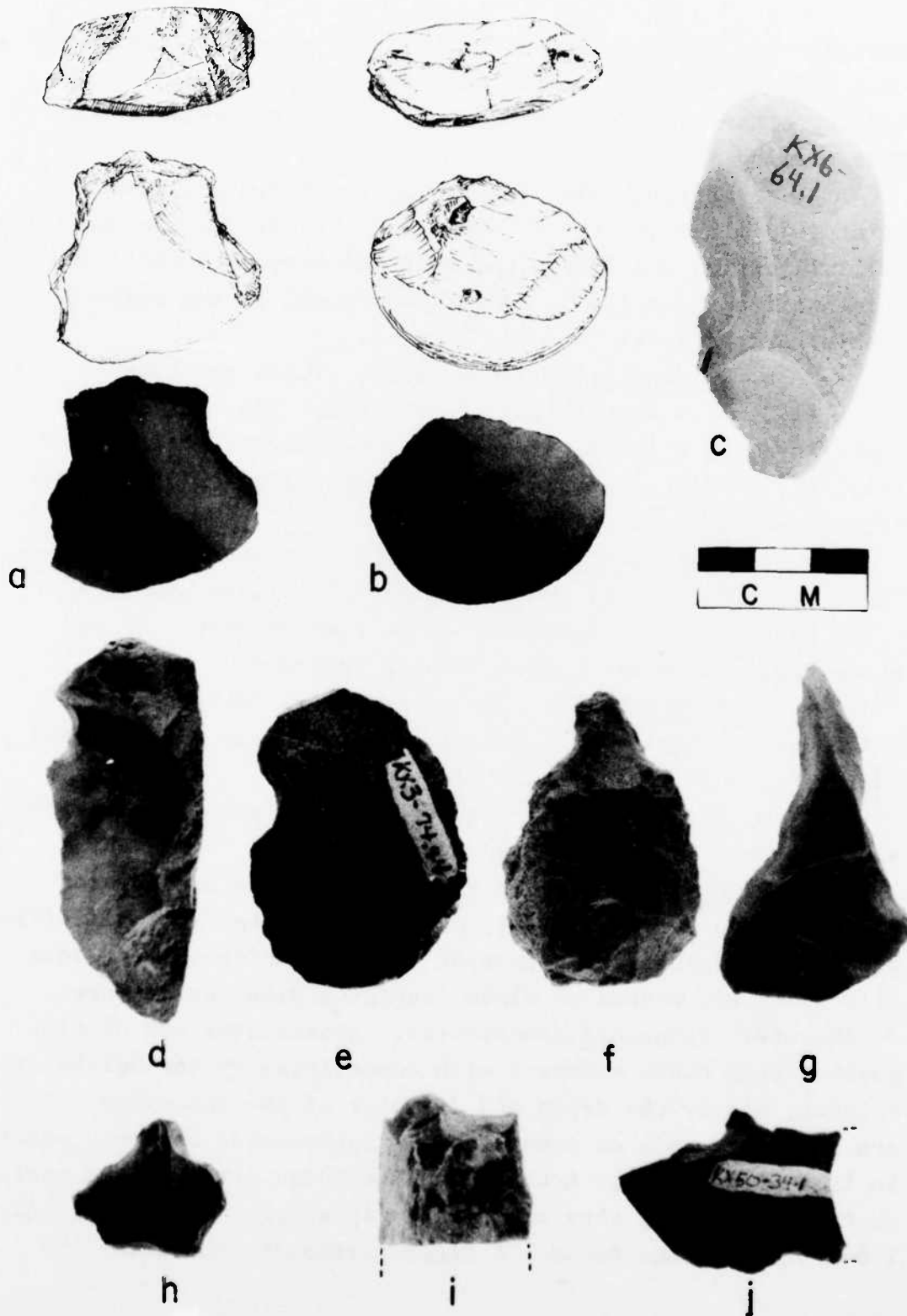
11. Chipped pebbles (131) (Fig. 65a-c). On the basis of form, these are bifacial (57) and unifacial (74). These tools are mainly small cortex pebbles that appear to have been minimally modified for use as knives, wedges, gouges, or hammers. Except for their consistent form and frequent occurrence in small numbers, they might be mistaken for tested pebbles.

Relatively high percentages of the chipped pebbles are of milky quartz and silicified wood. These lithic materials tend to fracture in an irregular manner, and they are rarely used for tools. Therefore, the preference for this material is unexpected, and the significance is unknown. Among possible explanations is the theory that the sharp jagged edges produced on these small thick tools was a desired feature. It is perhaps noteworthy that of the milky quartz tools, nearly 50% are chipped pebbles.

Chipped pebbles are uncommon in areas adjoining this portion of north-central Texas. In the study area they occur in Archaic contexts, and may be a diagnostic Archaic tool either locally or regionally. At 7.92% they are a relatively common class of stone tool. In the project area, they consistently occur in moderate numbers at sites which contain a large and

Figure 65. Chipped pebbles, spokeshaves, and graters.
Full size.

- a. Bifacial chipped pebble, 41KX49.9, milky quartz.
- b. Bifacial chipped pebble, 41KX48.1, milky quartz.
- c. Unifacial chipped pebble, 41KX6-64.1, unidentified stone.
- d. Spokeshave, 41KXTI47.1, Potter chert.
- e. Spokeshave, 41KX3-74.44, Potter chert.
- f. Graver, 41KX64.5, Potter chert.
- g. Graver, 41KX57.55, Edwards flint.
- h. Graver, 41KX2-488.1, Potter chert.
- i. Graver, 41KX2-678.1, silicified wood.
- j. Graver, 41KX50-34.1, silicified wood.



variable assemblage of stone tools. The single exception to this rule is at 41KX4, which contained many chipped pebbles but few other classes of tools. No reason is apparent for this seeming anomaly.

a. Bifacial (57) (Fig. 65a,b). These are Edwards flint (1), milky quartz (7), Potter chert (3), purple quartzite (4), silicified wood (17), unidentified quartzite (12), and unidentified stone (13). Approximately 45% of the chipped pebbles are bifacial.

b. Unifacial (74) (Fig. 65c). These are Edwards flint (1), milky quartz (15), Potter chert (8), purple quartzite (2), silicified wood (14), unidentified quartzite (14), and unidentified stone (20). Approximately 55% of the chipped pebbles are unifacial.

12. Unclassifiable fragments (10). On the basis of form, these are bifacial (8) and unifacial (2). These are stone tools that are too fragmentary to be classifiable. Of the stone tools, 0.6% are unclassifiable fragments.

a. Bifacial (8). Two of these are Edwards flint, 2 are Potter chert, 2 are silicified wood, 1 is unidentified quartzite, and 1 is unidentified stone.

b. Unifacial (2). One of these is purple quartzite and the other is unidentified quartzite.

13. Spokeshaves (47) (Fig. 65d,e). These are Edwards flint (1), Potter chert (20), purple quartzite (15), silicified wood (4), unidentified quartzite (6), and unidentified stone (1). They are flakes or flake fragments with one or more deliberately retouched concavities. Spokeshaves are distinguished from flake scrapers with concavities by the deliberate retouch, and by the depth and diameter of the concavity. They are sometimes made on other tools. Spokeshaves commonly occur in limited numbers in Archaic and NeoIndian sites of the region. In the study area, they are relatively scarce, comprising only 2.84% of the stone tools. A disproportionate number of the

spokeshaves are of purple quartzite; however, five of these specimens are from one site (4lKX3) where the incidence of this lithic material was very high. Spokeshaves were found at most or all kinds of sites in the project area.

14. Gravers (68) (Fig. 65f-j). These are Edwards flint (7), Potter chert (31), purple quartzite (5), silicified wood (8), unidentified quartzite (8), and unidentified stone (9). They are flakes and flake fragments of varying thickness and size, usually with a short unifacially retouched beak at the distal end. Some (Fig. 65i) are made on, or are parts of, broken tools such as scrapers. Gravers are commonly found in limited numbers at all types of sites in the region. In the project area, they constitute 4.11% of the stone tools, and were recovered from most kinds of sites.

15. Denticulates (7) (Fig. 66a,b). These are Potter chert (4), purple quartzite (1), and unidentified quartzite (2). They are thin flake fragments with two or more adjacent cavities. Denticulates occasionally occur in very limited numbers in Archaic and NeoIndian sites of the region. They are rare in the study area at only 0.42% of the stone tools. They are mainly from camp and specialized processing sites.

16. Scrapers (308). On the basis of form, scrapers are classified as end (23), side (24), unclassified (5), and flake (256). At 18.62%, they are a relatively common stone tool class. But as the great majority are flake scrapers, and these tools exhibit minimal deliberate edge retouch, caution may be indicated if inferences are to be drawn. Side and end scrapers are actually quite rare in the collections.

a. End (23) (Fig. 66c-f). These are Alibates agate (2), Edwards flint (9), Potter chert (8), unidentified quartzite (2), and unidentified stone (2). End scrapers are blades or flakes with a steep-angled convex bit produced on the broad distal end by pressure flaking on the outer face. One or both lateral edges often are worked on the same face, and

Figure 66. Denticulates and scrapers. Full size.

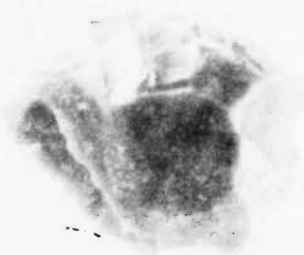
- a. Denticulate, 41KX44-3.21, quartzite.
- b. Denticulate, 41KX4-132.1, Potter chert.
- c. End scraper, 41KX68.16, Edwards flint.
- d. End scraper, 41KX49.15, Potter chert.
- e. End scraper, 41KX35-279.1, Potter chert.
- f. End scraper, 41KX47.13, Alibates agate.
- g. Side scraper, 41KX9-19.3, Edwards flint.
- h. Side scraper, 41KX3-164.4, Potter chert.
- i. Flake scraper, 41KX3-74.39, purple quartzite.
- j. Flake scraper, 41KX3-37.5, Potter chert.



a



b



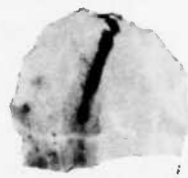
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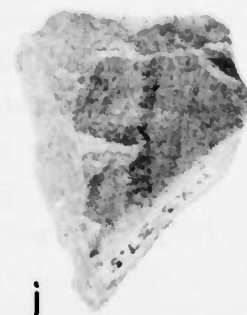
g



h



i



j

scraping edges sometimes are worn. Size varies considerably, and small specimens may often be much-resharpened tools. End scrapers probably were used mainly for hide working.

In the project area, the thicker unifacial varieties prevail (Fig. 66c,d), but a few bifacial examples (Fig. 66e) are present, and one thin specimen (Fig. 66f) is a typical Panhandle Aspect end scraper of Alibates agate. End scrapers are common in the region, and occur in all types of archeological sites. In the project area they are scarce, at approximately 7.5% of the scraper class. They occur at all types of sites, but are most abundant at 41KX2, a tested specialized processing site. The scarcity of this tool type suggests a local subsistence base with minimal dependence on game. The low incidence of knives and projectile points reinforces this inference.

b. Side (24) (Fig. 66g,h). These are Edwards flint (4), Potter chert (12), purple quartzite (3), silicified wood (2), unidentified quartzite (1), and unidentified stone (2). Most are large flakes or flake fragments with the outer face pressure-flaked along a straight or convex lateral edge. Size ranges are length 30-100mm, width 20-70mm, and thickness 7-27mm. They are mainly unifacially chipped flakes of Potter chert. Regionally, side scrapers occur less frequently than do end scrapers; however, small numbers of both varieties commonly occur in all types of archeological sites. They are rare in the project area, but are slightly more abundant than end scrapers at approximately 7.8% of the scraper class. As with end scrapers, they are most frequent at 41KX2.

c. Unclassified (5). These are Alibates agate (1), silicified wood (2), Tecovas jasper (1), and unidentified quartzite (1). All are so broken that classification cannot be accomplished with any degree of certainty. Approximately 1.6% of the scrapers are unclassified.

d. Flake (256) (Fig. 66i-j). These are Edwards flint (22), Potter chert (99), purple quartzite (53), silicified

wood (7), Tecovas jasper (5), unidentified quartzite (47), and unidentified stone (23). Most of these are flakes or flake fragments with a convex lateral edge retouched on the outer face. Included, however, are flakes and fragments that are retouched on one or both faces, along part of or all of one or more edges, in convex, straight, or concave form. Multiple retouched edges usually are isolated, but may be adjacent. Most of the retouching appears to be intentional, but some may have resulted from use. The complete specimens seem to be flakes which were minimally modified for, or by, use as scrapers. Most of the fragmentary specimens probably represent the same kind of flake scrapers as the complete specimens, but some may be edge fragments of other artifacts such as end scrapers or dartpoint preforms. At approximately 83%, flake scrapers are the most common type of scraper. They occur at all types of sites in the project area. Analytic data pertaining to flake scrapers are summarized in Tables 19 and 20.

17. Retouched flakes (584). These are Alibates agate (5), Edwards flint (51), milky quartz (2), Potter chert (279), purple quartzite (66), silicified wood (36), Tecovas jasper (4), unidentified quartzite (79), and unidentified stone (62). They are flakes or flake fragments with minimal edge damage that probably resulted from jostling, or trampling, or by use in cutting or scraping, rather than from deliberate shaping. Such flakes are sometimes termed damaged or utilized flakes. As previously noted, percentages were not calculated for this possible tool class. Analytical data pertaining to retouched flakes is summarized in Tables 21 and 22.

The function or functions of these "tools" is unknown, but presumably was casual. As there are several indications that wild plant foods may have played a significant role in the subsistence base, the retouched flakes could have been used locally for processing plant materials. Retouched flakes are a common tool in Archaic and NeoIndian sites of the region, and were found at all types of sites in the project area.

Table 19. Percentages of materials for each class of flake scrapers.

	Edwards flint	Potter chert	Purple quartzite	Silicified wood	Tecovas jasper	Unident. quartzite	Unident. stone	Total %
Cortex	4.4	40.0	25.4	3.4		19.5	7.3	100.0
Concave	5.6	44.4	22.2			16.7	11.1	100.0
Convex		41.4	17.9	5.3		28.4	7.4	100.4
Straight	11.1	52.8	19.4			11.1	5.6	100.0
Multiple	7.1	28.6	42.9	3.6		10.7	7.1	100.0
2 Concavities			100.0					100.0
Concave & straight		100.0						100.0
Concave & convex	7.7	30.8	53.8				7.7	100.0
2 Straight		50.0				50.0		100.0
1 Straight & convex		25.0	25.0	25.0		25.0		100.0
Straight & 2 convex		100.0						100.0
2 Convex	25.0		25.0			25.0	25.0	100.0
Non-cortex	17.9	31.0	16.7	1.2	6.0	13.1	14.3	100.2
Concave		28.6	42.8			14.3	14.3	100.0
Convex	14.3	34.3	22.9		11.4	11.4	5.7	100.0
Straight	24.1	34.5	3.4	3.4	3.4	13.8	17.2	99.8
Multiple		20.0	20.0			20.0	40.0	100.0
2 Straight	66.7		33.3					100.0
Straight & convex	25.0	25.0				25.0	25.0	100.0
Straight & 2 convex							100.0	100.0

Table 20. Percentages of classes for each material of flake scrapers.

	Edwards flint	Potter chert	Purple quartzite	Silicified wood	Tecovas jasper	Unident. quartzite	Unident. stone
Cortex							
Concave	4.5	8.1	7.5			6.4	8.7
Convex		39.4	32.1	71.4		57.4	30.4
Straight	18.2	19.2	13.2			8.5	8.7
Multiple							
2 Concavities			5.7				
Concave & straight		1.0					
Concave & convex	4.5	4.1	13.2				4.3
2 Straight		1.0				2.1	
1 Straight & convex		1.0	1.9	14.3		2.1	
Straight & 2 convex		1.0					
2 Convex	4.5		1.9			2.1	4.3
Non-cortex							
Concave		2.0	5.7			2.1	4.3
Convex	22.7	12.1	15.1		80.0	8.5	8.7
Straight	31.8	10.1	1.9	14.3	20.0	8.5	21.7
Multiple							
2 Straight	9.1		1.9				
Straight & convex	4.5	1.0				2.1	4.3
Straight & 2 convex							4.3
Total %	99.8	100.0	100.0	100.0	100.0	99.8	99.7

Table 21. Percentages of materials for each class of retouched flakes.

	Alibates	agate	Edwards	flint	Milky quartz	Potter chert	Purple quartzite	Silicified wood	Tecovas Jasper	Unident. quartzite	Unident. stone	Total %
Full cortex			3.5	1.2	43.0	17.4	9.3	14.0	11.6	100.0		
Concave			12.5		50.0	6.3	12.5	12.5	6.3	100.1		
Convex				2.8	38.9	16.7	11.1	13.9	16.7	100.1		
Straight		4.3			47.8	26.1	4.3	13.0	4.3	99.8		
Multiple					36.4	18.2	9.1	18.2	18.2	100.1		
Concave & straight						100.0				100.0		
Concave & convex					57.1	14.3		14.3	14.3	100.0		
2 Straight								100.0		100.0		
Straight & convex								100.0		100.0		
2 Convex										100.0		
Part cortex	0.4	6.7			49.6	9.9	6.0	17.4	9.9	100.0		
Concave		4.6			60.5	14.0	4.6	9.3	7.0	100.0		
Convex	0.7	4.9			45.8	9.7	5.6	20.8	12.5	100.0		
Straight		9.7			50.0	11.3	9.7	12.9	6.5	100.1		
Multiple		12.1			51.5	3.0	3.0	21.2	9.1	99.9		
2 Concave					40.0			60.0		100.0		
Concave & straight		42.9			42.9				14.3	100.1		
Concave & convex		9.1			45.5	9.1	9.1	27.3		100.1		
2 Concave & convex					50.0			50.0		100.0		
2 Straight					100.0					100.0		
Straight & convex					60.0				40.0	100.0		
2 Convex					100.0					100.0		
Non-cortex	1.9	13.4	0.5		47.2	10.6	5.1	8.3	11.1	100.0		
Concave		9.1			60.6	9.1	3.0	6.1	12.1	100.0		
Convex	2.0	10.1	1.0		48.5	11.1	3.0	4.0	9.1	99.9		
Straight	2.9	17.1			44.3	7.1	8.6	7.1	12.9	100.0		
Multiple		28.6			21.4	28.6	7.1	14.3		100.0		
Concave & straight		25.0			25.0	25.0	25.0	25.0		100.0		
Concave & convex					50.0	50.0				100.0		

Straight & convex										100.0	100.0
2 Convex										100.0	100.0
Part cortex										17.4	9.9
Concave										9.3	7.0
Convex										20.8	12.5
Straight										12.9	6.5
Multiple										21.2	9.1
2 Concave										60.0	100.0
Concave & straight										14.3	100.1
Concave & convex										27.3	100.1
2 Concave & convex										50.0	100.0
2 Straight											100.0
Straight & convex										40.0	100.0
2 Convex											100.0
Non-cortex											100.0
Concave										1.9	11.1
Convex										8.3	9.1
Straight										6.1	12.1
Multiple										11.1	9.1
Concave & straight										7.1	12.9
Concave & convex										14.3	100.0
Concave, straight											100.0
& convex											100.0
Concave & 2 convex											100.0
Straight & convex										40.0	100.0
3 Concave											100.0

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Table 22. Percentages of classes for each material of retouched flakes.

	Alibates agate	Edwards flint	Milky quartz	Potter chert	Purple quartzite	Silicified wood	Tecovas jasper	Unident. quartzite	Unident. stone
Full cortex									
Concave		3.9		2.9	1.5	5.6		2.5	1.6
Convex			50.0	5.0	9.1	11.1		6.3	9.7
Straight		1.9		3.9	9.1	2.8		3.8	1.6
Multiple									
Concave & straight					1.5				
Concave & convex				1.4	1.5			1.3	1.6
2 Straight								1.3	
Straight & convex						2.8			
2 Convex									1.6
Part cortex									
Concave		3.9		9.3	9.1	5.6		5.1	4.8
Convex	20.0	13.7		23.7	21.2	22.2		38.0	29.0
Straight		11.8		11.1	10.6	16.7		10.1	6.5
Multiple									
2 Concave				0.7				3.8	
Concave & straight		5.8		1.1					1.6
Concave & convex		1.9		1.7	1.5	2.8		3.8	
2 Concave & convex				0.4				1.3	
2 Straight				0.4					
Straight & convex				1.1					3.2
2 Convex				0.7					
Non-cortex									
Concave		5.8		7.2	4.5	2.8		2.5	6.5
Convex	40.0	19.6	50.0	17.2	16.7	8.3	100.0	13.9	14.5
Straight	40.0	23.5		11.1	7.6	16.7		6.3	14.5
Multiple									
Concave & straight		1.9		0.4	1.5	2.8			

Concave & convex		1.4	1.5		1.3	1.6
2 Straight					1.3	
Straight & convex			2.8			
2 Convex						1.6
Part cortex						
Concave	3.9	9.3	9.1	5.6	5.1	4.8
Convex	20.0	23.7	21.2	22.2	38.0	29.0
Straight	11.8	11.1	10.6	16.7	10.1	6.5
Multiple						
2 Concave		0.7			3.8	
Concave & straight	5.8	1.1				1.6
Concave & convex	1.9	1.7	1.5	2.8	3.8	
2 Concave & convex		0.4			1.3	
2 Straight		0.4				
Straight & convex		1.1				3.2
2 Convex		0.7				
Non-cortex						
Concave	5.8	7.2	4.5	2.8	2.5	6.5
Convex	40.0	19.6	50.0	16.7	100.0	14.5
Straight	40.0	23.5	11.1	7.6	6.3	14.5
Multiple						
Concave & straight	1.9	0.4	1.5	2.8		
Concave & convex		0.4	1.5			
Concave, straight, convex	1.9					
Concave & 2 convex						
Straight & convex	1.9		3.0			3.2
3 Concave	1.9					
Total %	100.0	99.7	100.0	100.0	99.9	99.9

2

B. Battered (hammers) (302) (Fig. 67a-e). On the basis of form, these are classified as pebbles (112), discoids (25), and edge fragments (164). They are pebbles or fragments with crushed ends, corners, or edges. The majority are of Potter chert, which regionally is a preferred lithic material for hammerstones, as well as for many other stone tools. Many specimens are complete or nearly complete, perhaps because the Potter chert does not fracture readily. These specimens (Fig. 67a) usually are deliberately chipped and noticeably battered. Hammerstones of quartzite also are common. These items (Fig. 67b) generally are neither deliberately chipped nor heavily battered.

Hammerstones are common in Archaic and NeoIndian sites of the region. In the project area, they constitute 18.26% of the stone tools. This is an artificially high fraction since many are fragments, some of them doubtless from the same tool. Probably 10-15% is a more accurate figure for this stone tool class. Nonetheless, hammerstones are common tools.

1. Pebbles (113) (Fig. 67a,b). These are Potter chert (72), purple quartzite (13), silicified wood (1), unidentified quartzite (22), and unidentified stone (5). They are of various sizes, ranging from small pebbles 50mm in diameter to near cobbles of 100mm diameter, but most are approximately 70mm. Pebble hammerstones constitute more than 80% of the identifiable hammerstones. They were found at all types of sites in the project area, but probably are most frequent at possible workshop sites.

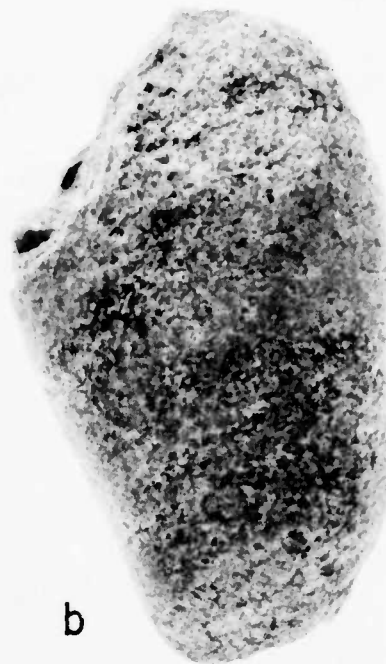
2. Discoids (25) (Fig. 67c-e). These are Potter chert (21), unidentified quartzite (3), and unidentified stone (1). Discoids, which may be a special variety of hammerstone, are biscuit-shaped pebbles that fit the hand well, and are heavily battered around the perimeter. They are smaller and flatter than pebble hammerstones. The function of these tools is unknown, but their appearance suggests that they may have been used for flint-knapping. Limited numbers of similar tools

Figure 67. Hammerstones. Full size.

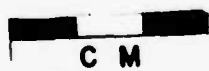
- a. Bifacial pebble hammerstone, 41KX39-5.1, Potter chert.
- b. Bifacial pebble hammerstone, 41KX3-74.26, quartzite.
- c. Bifacial discoid hammerstone, 41KX54.78, quartzite.
- d. Bifacial discoid hammerstone, 41KX54.82, Potter chert.
- e. Bifacial discoid hammerstone, 41KX78.75, Potter chert.



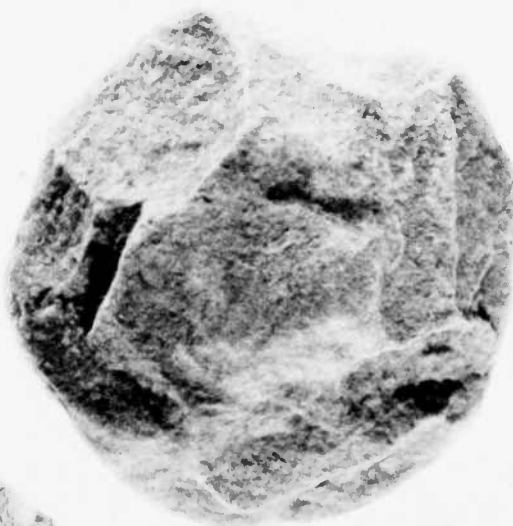
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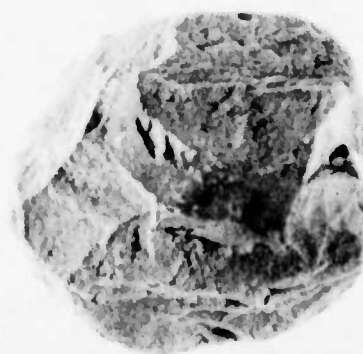
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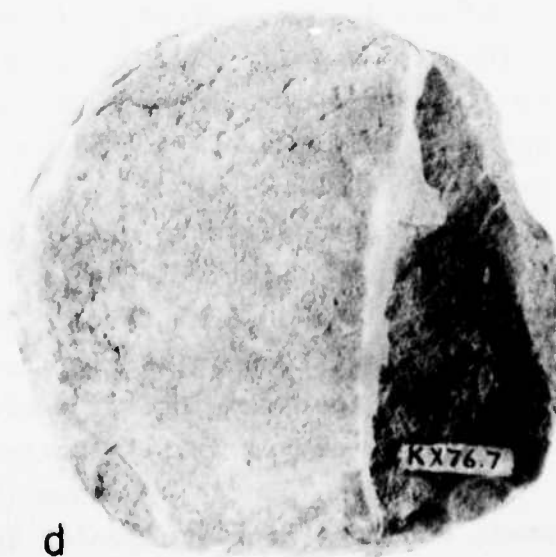
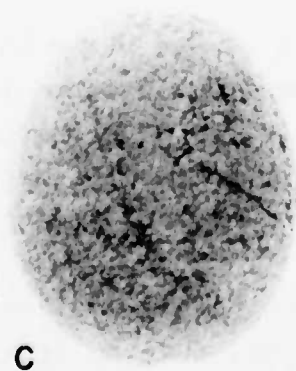
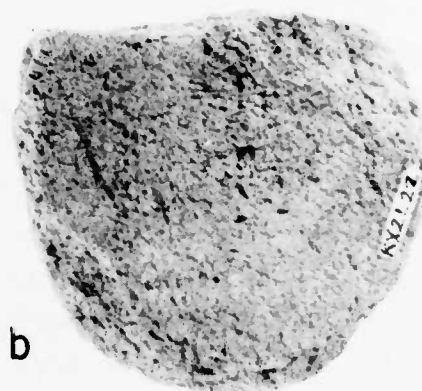
d



e

Figure 68. Manos. 3/4 size.

- a. Bifacial mano, 41KX68.39 & 42, quartzite.
- b. Unifacial mano, 41KX21.22, sandstone.
- c. Unifacial mano, 41KX44-1.7, quartzite.
- d. Bifacial mano, 41KX76.7, sandstone.



consistently occur in Archaic and NeoIndian sites of the region. In the project area, they are far less common than pebble hammer-stones, constituting less than 20% of the identifiable hammers. They came from most kinds of sites, but seem to be associated mainly with possible workshops.

3. Edge fragments (164). These are Potter chert (150), purple quartzite (4), unidentified quartzite (9), and unidentified stone (1).

C. Worn (143). On the basis of form or probable function, worn stone tools are classified as manos (125), grinding slab (1), unidentified (8), flakes (8), and boatstone (1). At 8.65% they are a relatively common stone tool class, and this high incidence, together with the low incidence of knives, scrapers, and other hunting-associated tools already noted, indicates dietary emphasis on plant foods. Worn stone tools commonly occur in Archaic and NeoIndian sites of the region. Most sites in the project area contained a few specimens.

1. Manos (125) (Fig. 68a-d). On the basis of form, these are bifacial (33), unifacial (24), and unidentified fragments (68). They are complete and broken milling stones that are worn and sometimes pecked on one or both faces. Specimens vary greatly in size, shape, and degree and pattern of wear.

The vast majority (120) are pebble manos of quartzitic material, usually true quartzite, but occasionally schistose or gneissic in nature. Four manos are made from fragments of sandstone.

Most of the quartzite manos (Fig. 68a,c) are ovate to rectanguloid and relatively large, ranging from 65-145mm long, 50-85mm wide, and 30-65mm thick. Thickness tends to be uniform, and grinding surfaces to be flat and highly polished from wear. Many of these specimens are fire-cracked or broken, and the ends of the manos are usually battered.

In contrast, sandstone manos (Fig. 68b,d) are smaller, thinner, and more nearly circular in outline, ranging from

85-100mm in diameter, and 25-35mm thick. They are thickest in the middle, and the relatively thin edges are not noticeably battered. Grinding surfaces sometimes are beveled. None of these manos appears to be burned.

Manos commonly occur in Archaic and NeoIndian sites of the region. In the project area, 7.56% of the stone tools are classified as manos. However, more than 50% of these items are fragments of tools, and at some sites (41KX54, 41KG15) several fragments are from the same mano. Therefore the stated percentage is artificially high. Manos were present at all types of sites in the project area.

a. Bifacial (33) (Fig. 68a,d). These are purple quartzite (3), sandstone (2), and unidentified quartzite (28). Approximately 58% of the identifiable manos are bifacial.

b. Unifacial (24) (Fig. 68b,c). Two of these are sandstone and 22 are unidentified quartzite. Of the identifiable manos, approximately 42% are unifacial.

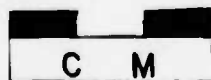
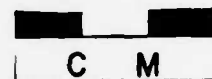
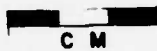
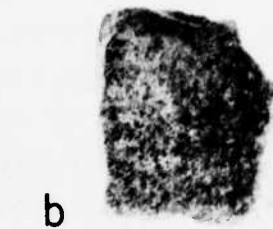
c. Unidentified fragments (68). Thirteen of these are purple quartzite and 55 are unidentified quartzite. Half of these items are from two sites, 41KG15 and 41KX54. At least 10 of the 18 fragments from 41KG15 are from only three fire-broken manos.

2. Grinding slab (1) (Fig. 69a). This is a bifacially worn edge fragment of sandstone. It is from 41KX80, a camp of unknown affiliation that also produced one of the few sandstone manos. At 0.06%, grinding slabs are rare stone tools in the project area. However, several specimens have been collected by local amateurs, and seven fragments were collected during the initial reconnaissance of the Truscott Brine Lake area (Hughes 1972:V-12).

3. Unidentified (8). One of these is sandstone and 7 are unidentified quartzite. They are surface or interior fragments, probably of manos, although the sandstone specimen (Fig. 69b) could be a grinding slab fragment.

Figure 69. Ground stone items. Full size.

- a. Bifacial grinding slab, 41KX80.4, sandstone.
- b. Bifacial unidentified ground stone fragment, 41KG10.9, sandstone.
- c. Worn flake, 41KX37-72.1, Potter chert.
- d. Worn flake, 41KX35-409.1, Potter chert.
- e. Boatstone, 41KX44-3.42m, sandstone.



e

4. Flakes (8) (Fig. 69c,d). These are Potter chert (6), purple quartzite (1), and Tecovas jasper (1). They are large or small, thick or thin flakes, flake fragments, or tool fragments, with part or all of an edge worn seemingly from heavy use. In most instances the wear is on a convex edge. Worn flakes occur sparsely in many archeological sites of the region. In the study area they constitute 0.48% of the stone tools, and come from only three sites. The majority (5) are from 41KX35, while the others are from 41KX37 and 41KX41. All three sites are camps and workshops.

5. Boatstone (1) (Fig. 69e). This is an end fragment (about half) of a plano-convex boatstone of fine-grained, slightly micaceous sandstone that probably is of local origin. The faces and edges have been smoothed and shaped by grinding but none is worn completely smooth. A small patch on one lateral facet has a polish that resulted from heavy wear. The maximum dimensions of the boatstone fragment are 53mm x 34mm x 18mm. The planar face is very slightly concave, while the convex face has five facets. The center portion of the convex face is flat, measuring 17mm wide at the mid-line break, and tapering to 9mm at the point or end. Flanking it on either side are narrow strips 7mm and 10mm wide beveled at a low angle to the flat center. Adjoining these strips are yet another pair of beveled strips, 10mm and 7mm wide respectively, that terminate at the edges of the specimen.

The boatstone is from 41KX44, a site that was mostly destroyed to create a pond levee prior to the time that collecting was done. The present collection includes knives, gouges, and one of the few denticulates recovered. The site is classified as an Archaic camp (Table 5), but cultural affiliations are uncertain. Boatstones are exceedingly rare in archeological sites of the region as well as in the project area. They are known to occur in the Wylie Focus, and in the Edwards Plateau Aspect (Suhm et al 1954:91,110).

LITHIC DEBITAGE

On the basis of form or function, the categories of lithic debitage (4305) are cores (157), tested pebbles (38), and unworked flakes (4110). Specimen data are summarized in Tables 23-26. Tables 23 & 24 provide numbers of lithic debitage and/or stone tools by materials, sites, and/or classes. Tables 25 & 26 provide analytical data pertaining to the specimens.

I. Cores (157) (Fig. 70a-c). Cores are classified on the basis of probable function. They are Edwards flint (6), Potter chert (69), purple quartzite (22), silicified wood (12), unidentified quartzite (14), and unidentified stone (34). The category includes core remnants, and is made up of a variety of sizes and shapes of percussion-flaked specimens. A few of the cores have battered edges and probably were used as hammers. One specimen (Fig. 70a) has a worn edge and a battered edge. Cores were infrequently recovered, but came from all types of sites in the project area (Tables 5,23).

II. Tested pebbles (38) (Fig. 70d). These are classified on the basis of form. One is Edwards flint, 15 are Potter chert, 6 are silicified wood, 6 are unidentified quartzite, and 10 are unidentified stone. They are pebbles of various sizes with one or two flakes removed by percussion flaking. Some specimens probably are core preforms, while others apparently are core rejects. The group contains pebbles of all of the lithic materials utilized except purple quartzite. This exception may be attributable to the fact that purple quartzite is a preferred material and thus was unlikely to be rejected after being tested. In the project area, tested pebbles are invariably found at sites that also contain cores; however, sites with cores do not necessarily contain tested pebbles.

III. Unworked flakes (4110). These specimens are classified primarily on the basis of form. In order to allow for additional studies, they are sub-classified according to flake

Figure 70. Cores and tested pebble. Full size.

- a. Core, 41KX68.31, Potter chert.
- b. Core, 41KX35-368.1, Potter chert.
- c. Core, 41KX3-41.16, purple quartzite.
- d. Tested pebble, 41KX3-42.6, silicified wood.



size and the presence or absence of cortex. The two arbitrarily selected size groups are "less than 30mm" and "more than 30mm". The presence or absence of cortex on flakes of Alibates agate and Tecovas jasper may not be significant, since both of these lithic types often occur naturally in a non-cortex condition. Unworked flakes are the most numerous category of specimens collected, comprising approximately 60% of the stone tools and debitage, and more than 95% of the debitage itself.

A. Cortex (2302). Cortex flakes comprise approximately 35% of the stone tools and debitage, and 55% of the unworked flake category.

1. Less than 30mm (784). Fifty-three are Edwards flint, 8 are milky quartz, 293 are Potter chert, 91 are purple quartzite, 114 are silicified wood, 3 are Tecovas jasper, 107 are unidentified quartzite, and 115 are unidentified stone. Of the stone tools and debitage, approximately 10% are unworked flakes less than 30mm in diameter, and about 35% of the unworked cortex flakes are of this size.

2. Greater than 30mm (1518). Nineteen are Edwards flint, 3 are milky quartz, 814 are Potter chert, 192 are purple quartzite, 123 are silicified wood, 1 is Tecovas jasper, 253 are unidentified quartzite, and 113 are unidentified stone. Of the stone tools and debitage, approximately 25% are unworked flakes greater than 30mm in diameter, and about 65% of the unworked cortex flakes are of this size.

B. Non-cortex (1808). Non-cortex flakes comprise approximately 25% of the stone tools and debitage, and 45% of the unworked flake category.

1. Less than 30mm (1294). Six are Alibates agate, 194 are Edwards flint, 7 are milky quartz, 1 is obsidian, 497 are Potter chert, 159 are purple quartzite, 115 are silicified wood, 8 are Tecovas jasper, 144 are unidentified quartzite, and 163 are unidentified stone. Of the stone tools and debitage, approximately 20% are unworked non-cortex flakes less than 30mm

Table 23. Numbers of lithic debitage by materials, classes, and sites.

	Pipeline														Reservoir																						
	41KG14	41KG15	41KG16	41KG17	41KG18	41KG19	41KG20	41KG21	41KG22	41KG23	41KG24	41KG25	41KG26	41KG27	41KG28	41KG29	41KG30	41KG31	41KG32	41KG33	41KG34	41KG35	41KG36	41KG37	41KG38	41KG39	41KG40	41KG41	41KG42	41KG43	41KG44	41KG45	41KG46	41KG47	41KG48	41KG49	41KG50
I. Cores (157)																																					
A. Edwards flint (6)	1	1							2												1																
B. Potter chert (69)	4	2							4	6	3										2	12	9	2				1	1	4				1		2	
C. Purple quartzite (22)									1	3											1	7	2						1								
D. Silicified wood (12)											2				1	2					1	1												1			
E. Unident. quartzite (14)	2	1	1								1										3	1					1						1		2		
F. Unident. stone (34)		1							8	2											4	4						3		1				1			
II. Tested pebbles (38)																																					
A. Edwards flint (1)																					1																
B. Potter chert (15)											2										3	2														1	
C. Silicified wood (6)										1	1													1													
D. Unident. quartzite (6)									2		1										1	2															
E. Unident. stone (10)									2		1										2	1					1							1			
III. Unworked flakes (4110)																																					
A. Cortex (2302)																																					
1. Less than 30 mm (784)																																					
a. Edwards flint (53)									5		2										2	1	1		1	1			1	1	1					2	
b. Milky quartz (8)		1							1		3										1																
c. Potter chert (293)	4	3		1	2				38	10	4	70	1	2								42	15	3		2		4		4				4		8	5
d. Purple quartzite (91)	3	3	2	1		1			2	13												1	19	3		2	2	3		1				3			
e. Silicified wood (114)	3			1	1				15	3	1	42	1									4	4		2	1			1		1					3	
f. Tecovas jasper (3)												2																									
g. Unident. quartzite (107)	2	2	3		1	1			13	9	3	2	1									39	6		1		2	1					1		2		
h. Unident. stone (115)		6		1	1				11	2	3	22										13	2	4		2	1	1						2	1	1	3
2. Greater than 30 mm (1518)																																					
a. Edwards flint (19)									5													1	1														
b. Milky quartz (3)																																					1
c. Potter chert (814)	28	14	8	7	1	1			82	39	14	47	2	1	2	15						1	90	57		6	3	2	11	9	1		6	5	26	16	
d. Purple quartzite (192)	8	5	1	2	1				10	29												2	40	1	10	1		1	1	5	2	4		2		2	
e. Silicified wood (123)		2		1	3				16	4	1	33	2		1	1						1	5	3	1		3	7		1				4		2	
f. Tecovas jasper (1)																																					
g. Unident. quartzite (253)	6	2	1				1		21	42	3	3			2	5						3	47	2	8	1	1		1	3	2			5	1	4	4
h. Unident. stone (113)	5	3							16	6	4	7	1			1						1	12	3	3	1		3		2	1			2	1	1	3
B. Non-cortex (1808)																																					
1. Less than 30 mm (1294)																																					
a. Alibates agate (6)											1											1						1									
b. Edwards flint (194)				1	3				5	3		1	10	2	1	1						2	1	2	1			1		1						3	
c. Milky quartz (7)									1		2															1										1	
d. Obsidian (1)																																					
e. Potter chert (497)	13	5		1	5				86	16	2	124	1	5	1	8	1					46	3	13		2	3	2		4	1	2			28		
f. Purple quartzite (159)	5	4	2						11	51												3	1	34	3		1	1	4	1	1			1	2	3	
g. Silicified wood (115)	1	2		1					9	5	58	4										1								2			1	1	1		
h. Tecovas jasper (8)									1			1															1										
i. Unident. quartzite (144)	3	5		1	2				14	23	1											45	6		1		1		4			2					
j. Unident. stone (163)	7	3	2	1					10	1	1	19	2									1	13	2	1		1								3	3	
2. Greater than 30 mm (514)																																					
a. Edwards flint (17)											1		2												1											1	
b. Milky quartz (1)											1																										
c. Potter chert (304)	12	8	3	5					29	16	2	14	1	1	1	6						26	2	15	3	5	5	5	1	11			5	3	11		
d. Purple quartzite (79)	7	4	1	1					3	14	1											12	5					1	1	2					5		
e. Silicified wood (29)	1	1							3	1	2											2								1				1	1		
f. Tecovas jasper (1)												1																									
g. Unident. quartzite (60)	1	1	1						5	7	1											1	16	2	1			1	1	3			1	1			
h. Unident. stone (23)	2	1							4		2															1	1	2									
Totals	118	80	26	22	19	8	1		437	307	42	462	33	11	9	73	5	20	543	18	184	12	32	23	43	27	58	2	35	31	107						

[illegible]

Table 24. Numbers of stone tools and lithic debitage by sites and materials. 325

	Alibates agate	Edwards flint	Milky quartz	Obsidian	Potter chert	Purple quartzite	Sandstone	Silicified wood	Tecovas jasper	Unidentified quartzite	Unidentified stone	Totals
Pipeline sites												
41KG11						1						1
41KG14		3	1		84	28		11		18	24	169
41KG15		7	1		47	21		8		30	17	131
41KG16		1			17	6				8	2	34
41KG17		1			22	4		3		2	2	34
41KX60		5			16	1		2		3	2	29
41KX61		1			5	2		3		2	1	14
41KX62						1		1		2		4
Reservoir sites												
41KX2	3	36	11		386	48		72	6	106	72	740
41KX3		9	1		149	159		23	1	129	18	489
41KX4			2		38	1		4		15	14	74
41KX5		4	6		321	1		152	3	11	59	557
41KX6		18			10			6	3	2	6	45
41KX7		2			10	1						13
41KX8		2			9			3		3		17
41KX9	1	4			41	20		11		13	4	94
41KX33		4			1							5
41KX34	2	4	3		6	6		1		5	3	30
41KX35		9	1		322	145		21	2	205	60	765
41KX36		2			9	1				2	10	24
41KX37	1	8	3		184	35		14	1	49	28	323
41KX39		5			9	2		1	1	6	2	26
41KX40	1	3			29	7		5		7	6	58
41KX41		1			34	7		4		7	3	56
41KX42		6			46	18		15		15	11	111
41KX43		3			25	5		1		16	3	53
41KX44	1	5			60	18	1	6		25	4	120
41KX46		1			9	1		2			3	16
41KX47	1	6		1	43	4		3		18	6	82
41KX48		3	1		14	8		12		10	9	57
41KX49		8	3		93	12		4		8	9	137
41KX50		2	2		54	3		6		16	17	100

41KX46		1			9	1		2			3	16
41KX47	1	6		1	43	4		3		18	6	82
41KX48		3	1		14	8		12		10	9	57
41KX49		8	3		93	12		4		8	9	137
41KX50		2	2		54	3		6		16	17	100
41KX51		1			5	2		3		2		13
41KX52					10	4		3		3	1	21
41KX53										2		2
41KX54	4	25			356	42	1	29		69	36	562
41KX55		2			29	4		2		9	3	49
41KX56		10			77	47		9		40	18	201
41KX57	2	12			89	27		33		36	31	230
41KX58					1	4				3		8
41KX59					1						3	4
41KX63		1			7	2		2		5		17
41KX64	1	2			23	4		8		10	2	50
41KX65		2	4		37	5		2		4	1	55
41KX68	2	10			32	4		12	3	8	6	77
41KX69		7			11	1				2		21
41KX70		6			6			2		2	3	19
41KX72					10	1				2	2	15
41KX73		6			3					1	53	63
41KX75		2			14	1		1		1		19
41KX76		4			15	10	1	6		12	3	51
Isolated		8			30	1		7	1	11	6	64
Outside sites												
41KG10		10	3		12	5				9	13	52
41KG12					2	3				2	3	10
41KX21	1	21	4		15		1	4	2	8	8	64
41KX26		79		1	10	4		1	5	1	2	103
41KX32					17			5	1	3	11	37
41KX77	2	69			5	1		4		1	11	98
41KX78		3			117	29		8		20	14	191
41KX79			2		14	4		2		4	3	29
41KX80					1	1	2					4
41KX81		4			2	1						7
A1544					2				1		1	4
Total	22	447	48	2	3046	773	6	537	30	1003	629	6543

Table 25. Percentages of materials for each class of unworked flakes.

	Alibates agate	Edwards flint	Milky quartz	Obsidian	Potter chert	Purple quartzite	Silicified wood	Tecovas jasper	Unident. quartzite	Unident. stone
Cortex <30		18.7	42.1		15.4	17.5	29.9	23.1	19.0	27.8
Cortex >30		6.7	15.8		42.7	36.8	32.3	7.7	44.9	27.3
Non-cortex <30	100.0	68.6	36.8	100.0	26.0	30.5	30.2	61.5	25.5	39.4
Non-cortex >30		6.0	5.3		15.9	15.2	7.6	7.7	10.6	5.6
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 26. Percentages of classes for each material of unworked flakes.

	Alibates agate	Edwards flint	Milky quartz	Obsidian	Potter chert	Purple quartzite	Silicified wood	Tecovas jasper	Unident. quartzite	Unident. stone	Total %
Cortex <30		6.8	1.0		37.4	11.6	14.5	0.4	13.6	14.7	100.0
Cortex >30		1.3	0.2		53.6	12.6	8.1	0.1	16.7	7.4	100.0
Non-cortex <30	0.5	15.0	0.5	0.1	38.4	12.3	8.9	0.6	11.1	12.6	100.0
Non-cortex >30		3.3	0.2		59.1	15.4	5.6	0.2	11.7	4.5	100.0

in diameter. Of the unworked non-cortex flakes, approximately 70% are this size.

2. Greater than 30mm (514). Seventeen are Edwards flint, 1 is milky quartz, 304 are Potter chert, 79 are purple quartzite, 29 are silicified wood, 1 is Tecovas jasper, and 60 are unidentified stone. Of the stone tools and debitage, approximately 10% are unworked non-cortex flakes greater than 30mm in diameter. Of the unworked non-cortex flakes, approximately 30% are this size.

Interpretation of the lithic debitage data is beyond the scope of this report, but the following observations of possible significance are noted:

1. Potter chert flakes are by far the most numerous in all categories of unworked flakes.
2. Quartzite flakes, including the purple variety, are also common.
3. In general, two kinds of flakes predominate; cortex flakes greater than 30mm, and non-cortex flakes less than 30mm.
4. Non-cortex flakes greater than 30mm are the least common kind of flake.
5. Of the Edwards flint flakes, the great majority are non-cortex flakes less than 30mm.
6. Of the milky quartz flakes, nearly 80% are less than 30mm, and cortex and non-cortex flakes are approximately equal.

FIRE-CRACKED ROCK

Materials of fire-cracked rock (3557) are Edwards flint (1), milky quartz (8), Potter chert (2339), purple quartzite (141), sandstone (50), silicified wood (13), unidentified quartzite (912), and unidentified stone (93). These are angular fragments of rounded stream pebbles, probably broken from use as hearth stones or boiling stones. Data pertaining to fire-cracked rock are provided in Table 27.

Table 27. Numbers of fire-cracked rocks by sites and materials.

	Edwards flint	Milky quartz	Potter chert	Purple quartzite	Sandstone	Silicified wood	Unident. quartzite	Unident. stone	Totals
Pipeline sites									
41KG14			87	8		2	7	10	114
41KG15			37	17			22	11	87
41KG16			9	8			3		20
41KG17			3				4		7
41KG60			2						2
41KG61			3						3
41KG62			1						1
Reservoir sites									
41KX2	1	4	128	14		1	97	10	255
41KX3			20	4			34	2	60
41KX4			165	1		5	190	9	370
41KX5			1300	1		3	247	16	1567
41KX6			6		32		5	2	45
41KX7			1				3		4
41KX8			4						4
41KX9			30	3			5		38
41KX33			1		5				6
41KX34			2				1		3
41KX35			45	3			77	4	129
41KX36			2				2		4
41KX37		1	34	10			40	1	86
41KX39			2						2
41KX40			3				6		9
41KX41			20	4			4		28
41KX42			27	2			14		43
41KX43			13				1		14
41KX44			17	8			6		31
41KX47			6						6
41KX48		1	14	4			5		24
41KX49		1	37	8			18	3	67
41KX50		1	11				15	2	29
41KX51			9				1	1	11
41KX52			19	1					20
41KX53			3				2		5

41KX51	9							11	
41KX52	19	1						20	
41KX53	3						2	5	
41KX54	60				1		22	83	
41KX55	26						6	32	
41KX56	31	14					4	1	50
41KX57	66	18			1		30	3	118
41KX58	1	1					1		3
41KX59							1		1
41KX63	4								4
41KX64	11						5		16
41KX65	2						1		3
41KX68	6	1	10				2		19
41KX69	4	1							5
41KX72	4						6	3	13
41KX74	1						7	1	9
41KX76	11	2					3		16
Isolated	1						2		3
Outside sites									
41KX21	3						4	2	9
41KX77	2		3				4	5	14
41KX78	42	8					4	7	61
41KX79	2								2
A1544	1						1		2
Totals	1	8	2339	141	50	13	912	93	3557

Fire-cracked or burned rock is a common component of Archaic and NeoIndian sites of the region. At more than 35% of the stone items collected, it is a major feature of project area sites. Clearly, some important aboriginal activity is reflected in its occurrence.

Two or more possible explanations seem likely. There is little doubt that some of the fire-cracked rock is from fire-pits or hearths. Another possibility is that much of it is from stones that were heated, dropped into containers of food for cooking purposes, and later discarded from the cooking vessels. Given the non-pottery Archaic cultures that predominate in the project area, the stone boiling supposition seems reasonable.

Experiments show that stone boiling is a very rapid and effective food-cooking technique (Archer 1968). Moreover, quartzite is one of the most common local fire-cracked materials, and is particularly well suited to stone boiling because of its high heat-carrying capacity and uniform exterior surface (Archer 1968:5).

Probably both hearth stones and boiling stones are represented in the fire-cracked rock category. Fire-cracked rock came from all kinds of sites in the project area, but the highest concentrations are from camp sites.

For an analysis of fire-cracked rock at a tested Archaic site elsewhere in the Rolling Plains, see the report by Hughes and Hood (1976:25-38) on the Bitter Creek Site in Hall County, Texas.

MISCELLANEOUS ITEMS

The categories of miscellaneous items are faunal remains (81), pottery (5), metal (2), and samples (64). Data pertaining to miscellaneous items are summarized in Table 28.

Table 28. Numbers of miscellaneous items by classes and sites.

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I. Faunal Remains (81). Seventy-three of these are small unidentifiable fragments of bone and tooth, and eight are fragments of shells. The reason for this low incidence of faunal remains is not certainly known. Probably it is largely attributable to the fact that most of the sites are on clayey Permian red beds that have been extensively eroded and deflated by action of water and wind.

A. Bone (73). These are small fragments of bone and tooth. The bone is scrap and is unidentifiable. Most of the tooth fragments appear to be from moderate-to-large vertebrates such as deer or bison.

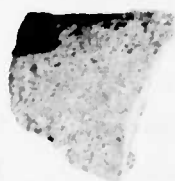
B. Shell (8). Six of these are tiny fragments that probably are mussel shell. Two specimens are shells of small terrestrial gastropods that commonly occur in the local Pleistocene and post-Pleistocene sediments of the region.

II. Pottery (5). All of the pottery sherds were found at a NeoIndian camp (41KX26) outside the project area. Four sherds are assigned to the type Leon Plain (Suhm and Jelks 1962:95) and one sherd is tentatively identified as Perdido Plain (Gunnerson and Gunnerson 1971:9-10). Descriptions of sherds are the result of both macroscopic study and microscopic examination using a binocular microscope at 8x magnification. Color descriptions are based on those provided in the Geological Society of America Rock-Color Chart (1951).

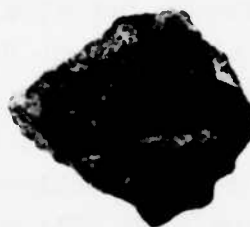
Of the Leon Plain ware, one (Fig. 71a) is a small rim sherd and three are small body sherds. Dimensions range from 4-21mm, and thickness varies from 4-6mm, excluding the rim sherd which is split so that the interior surface is missing. Exterior and interior surfaces are grayish orange (YR 7/4) to light brown (5YR 6/4), and are smoothed, in some instances nearly to the point of being polished. The core is grayish orange pink (5YR 7/2). The paste is fine, compact, and of uniform texture. It is heavily tempered with small particles of bone, which is usually burned black but is occasionally white. The

Figure 71. Pottery and metal artifacts. Pottery x 2,
metal artifacts full size.

- a. Rim sherd, exterior surface, 41KX26098, Leon Plain.
- b. Body-and-base sherd, interior and exterior surfaces, 41KX26-102, cf. Perdido Plain.
- c. cf. Benton Type A arrowpoint, 41KX49-1, metal.
- d. Cartridge case, 41KX3-132.1, metal.



a



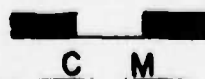
b



c



d



edges of the pottery yield to moderately firm fingernail pressure. Vessel form cannot be determined. The Leon Plain type is affiliated with the late NeoIndian Toyah focus of the Edwards Plateau, where it is sparsely but widely distributed. Similar ware is present at many sites in the Rolling Plains.

The possible Perdido Plain sherd (Fig. 71b,c) is a small body-and-base fragment which measures 8mm x 9mm and is 4mm and 5mm thick in the body and base portions respectively. The exterior surface is medium gray (N5) to medium dark gray (N4). It is smooth but somewhat uneven. The interior surface is medium dark gray to dark gray (N3) and is poorly smoothed. The core is grayish black (N2). The paste is abundantly tempered with small rounded to sub-angular grains of quartz sand. Pottery edges yield readily to fingernail pressure. The vessel was flat-bottomed; otherwise its form is not determinable. The Perdido Plain type has been attributed to the late prehistoric and early historic Faraon Apache of the Southern Plains in western Texas and eastern New Mexico (Gunnerson and Gunnerson 1971:9-10). Sherds identified as Perdido Plain have been reported at sites to the northwest of the project area in Tule Canyon in the Eastern Caprock Escarpment (Katz and Katz 1976) and in the Red Deer Creek valley in the northeastern part of the Llano Estacado (Hughes 1978).

III. Metal (2). These artifacts are classified on the basis of function. One specimen is an arrowpoint, while the other is a cartridge case.

A. Arrowpoint (1) (Fig. 71c). cf. Benton. This is a nearly complete diamond-shaped point that is tentatively assigned to the Benton Type A sub-group (Perino 1968:10-11). It is from 41KX49, a camp and workshop of unknown age. A small part of the presumed proximal end or stem of the point is missing, and the presence of a narrow base cannot be determined with certainty. However, the edges of the presumed distal end or blade have been sharpened, as described for the Benton type.

Maximum dimensions are 45mm x 19mm x 1.7mm. The blade and stem edges are approximately 24mm long. Both blade edges are slightly convex; one stem edge is straight; and the other is barely convex. The point is slightly curved, whether from being bent or for lack of complete flattening of the original piece of metal is not known. Metal arrowpoints frequently were made from flattened gun barrels, scrap kettle brass, or other curved metal objects (Perino 1968:10).

The Benton type is found in sites on the Southern Plains, on the Arkansas, Brazos, Red, Sabine, and Trinity rivers of Texas, Oklahoma, and Louisiana. Cultural affiliations are with the Norteño Focus dating in the mid-18th to 19th century. The presence of this metal point indicates historic Indian occupation in the project area.

B. Cartridge case (1) (Fig. 71d). This is identified as a .45 Smith and Wesson center fire cartridge. It was found at 41KX3 in the reservoir pool area. It is 1 and 3/32 inches long, with a diameter of 0.480 inches. The cartridge was introduced in 1875 for the Schofield revolver, and was a standard cartridge for the U.S. Army between 1875 and 1892. It is interchangeable with the .45 Colt cartridge; however, the reverse is not true, the .45 Colt being too long to be fired in the S & W revolver. The cartridge was commercially loaded in the United States until about 1940.

IV. Samples (64). On the basis of composition, these are classified as wood and/or charcoal (11) and soil (53). All of the samples are from five camp sites that were test excavated: 41KX4, 41KX5, 41KX6, 41KX34, and 41KX68 (Tables 5 and 28).

A. Wood and/or charcoal (11). These are mostly small fragments of charred or rotten wood that sometimes was associated with burned earth. None of the samples is both large and pure enough for radiocarbon dating. The only sample of pure charcoal, which is from an eroded hearth at

41KX68, weighs less than 15 grams. The four samples from 41KX6 probably are of modern age, as the site has been grubbed in the not too distant past.

B. Soil (53). Nine samples from the five tested sites except 41KX68 were submitted to the Anthropological Research Laboratories and Agricultural Extension Service at Texas A&M University for analysis. It was determined that none of the samples contained organic matter in amounts sufficient to warrant further testing, and none was considered likely to retain identifiable pollen (Bryant, pers. comm.). Therefore no additional chemical or biochemical tests were undertaken.

XV. SUMMARY

In 1977 the WTSU Archeological Research Laboratory contracted with the Corps of Engineers, Tulsa District (Contract No. DACW56-77-C-0110) to conduct archeological investigations at the Bateman Pumping Station, along the Bateman to Truscott pipeline, and at the Truscott Brine Lake in King and Knox counties, Texas.

These areas are to be affected by the Wichita River Chloride Control Project, which is aimed at reducing the brine concentration entering Lake Kemp and the Red River. The brine-laden water will be collected at low-flow dams and then piped to brine storage reservoirs.

The Bateman Pumping Station is located at mile 74.9 on the South Wichita River. The Truscott brine reservoir is located in the Bluff Creek valley, a northward-draining tributary of the North Wichita River.

That part of the Wichita River basin with which this report is concerned is in King and Knox counties. The drainage is to the east through an area of low relief. The geological strata exposed in the valley floor and walls are mainly Permian shales, sandstones, dolomites, and gypsums, capped with Pleistocene sands and gravels in many places.

The main streams are perennial, while most of the tributaries are intermittent and stream flow is erratic. There are many salt springs and seeps and therefore much of the water is highly saline.

Soils are variable. They are absent in many places due to the extensive erosion. They are best along the valley floors and on some of the interfluvial divides, where they are suitable for agriculture.

Four main environmental zones have been recognized. These are the juniper scrub, the mesquite-grassland savannah,

the mesquite thicket, and the riparian zone. Each zone contains plant and animal resources suitable for exploitation by the pre-historic inhabitants of the area.

Four main stages of cultural development have been recognized in this part of Texas. These are the PaleoIndian, Archaic, NeoIndian, and Historic stages. No evidence of PaleoIndian occupation and only limited evidence of NeoIndian occupation was found in the project area. The main utilization by native Americans was during the Archaic Stage.

Several early-day expeditions passed through the King and Knox counties area, including those of Pedro Vial, the Chihuahua traders, the Texan Santa Fe Expedition, and the Marcy-Neighbors Expedition. New Mexican comancheros or shepherders preceded Anglo settlement in much of the Rolling Plains. Large herds of bison were present during the 1870's, when they were hunted extensively. Locations of several buffalo-hunter camps are known. Somewhat later, ranching operations moved into the area, and today, along with farming, provide the major economic support of the area.

An archeological reconnaissance of the project area was conducted in 1972 as part of an environmental impact study conducted by West Texas State University. This reconnaissance included work not only at Truscott and Bateman, but also at Crowell, Y Ranch, Lowrance, and Ross. A total of 35 sites was recorded, including eight in the Truscott Reservoir and one near the Bateman Pumping Station.

The present study included an intensive on-foot survey of the Bateman Pumping Station, the Bateman to Truscott pipeline, and the Truscott Reservoir. Investigations also included testing and controlled collecting of sites in the Truscott Reservoir area. A total of 89 days was spent in the project area, involving about 507 person-days of work and covering about 5,805 acres of land.

The method of collecting at each site was based on the conditions at that site. Collecting was carried out in a general manner at all pipeline sites and at most reservoir sites, due to extensive erosion. Controlled collecting was conducted either by grid squares or by plotting the locations of artifacts on base maps of the sites. Testing was conducted where deposits and/or features warranted.

Archeological specimens collected in the project area are composed almost entirely of lithic materials. These materials are described in a special section of this report. Most of the materials were probably derived from the local Pleistocene Seymour Formation, but some are obviously foreign to the area. The lithic materials include Alibates agate, Edwards flint, milky quartz, obsidian, Potter chert, purple quartzite, sandstone, silicified wood, Tecovas jasper, unidentified quartzite, and unidentified stone.

Seventy sites (67 archeological and 3 historical) were investigated (9 along the pipeline, 49 in the Truscott Reservoir, and 12 outside the project area). These sites are described in the text of the report, and site data are also presented in tabular form (Table 2).

The sites in the project area occur in seven different geological locations: Pleistocene rim, Permian bench-bluff, Permian bench-edge, Permian bench-foot, Permian terrace, Quaternary terrace, and interfluvial divide. All were briefly utilized, and are open occupational areas, specialized activities stations, or workshops ranging from very small to large in size. No large permanent village sites were found. Most sites are surficial with extensive exposure. Prehistoric utilization of the area was primarily during the Archaic Stage.

Based on the presence of dartpoint types in the project area like those in central Texas, an Archaic sequence corresponding with one proposed for central Texas (Weir 1976a, 1976b; Patterson 1977) is postulated for this part of the Rolling Plains.

Five substages of the Archaic Stage are postulated: the Initial, beginning at about 5,000 B.C.; the Early, about 3,000 B.C.; Middle, 2,000 B.C.; Late, 1,000 B.C.; and Terminal, 1-1200 A.D.

An area roughly 50 acres in size was intensively surveyed at the Bateman Pumping Station. No sites were located.

The pipeline right-of-way, covering about 255 acres, was also intensively surveyed. Nine sites were located: four camps, two specialized processing sites, and three workshop sites. These sites are all extensively eroded. All artifactual material was situated directly on the weathered bedrock. No concentrations of material nor features worth testing were located.

That portion of the reservoir not covered during the reconnaissance was intensively surveyed on foot. The total area examined at the reservoir was about 5,500 acres. Four methods were employed in investigating the reservoir sites: general collecting, controlled collecting, test excavating, and total excavating. Discussion of the sites is organized on the basis of study methods.

Thirty-six of the sites were general-collected, since all were severely eroded. Three main kinds of functions are inferred for these sites, with several sites having a combination of functions. The sites include 27 camps, three specialized processing sites, five combination camp and workshop sites, and one combination camp and specialized processing site. At all of these sites, the artifactual material was lying directly on the weathered bedrock. No features or work stations were found at any of the sites. The sites were located in all geological positions. Most sites were small with very limited concentrations of material. Exceptions to this include Sites 41KX54 and 41KX57, where the artifacts were more numerous and diverse.

Four sites were collected with controlled measures. These include one camp, two combination camp and workshop sites, and one specialized processing site. The artifactual material,

again, was located on weathered bedrock, but the sites appeared to retain enough internal integrity to justify controlled collecting. With the exception of Site 41KX50, these sites had considerable numbers of specimens. No features were found at any of the sites. Work stations were recognizable within each of these sites.

Seven sites had deposits and/or features worthy of testing. These include four camps and three specialized processing sites. In all cases, artifactual material was lying on a sheetwashed surface, but the sites were relatively less disturbed than most. The tested sites were also collected in a controlled manner, except for Sites 41KX33 and 41KX68, which were general-collected.

All of the features tested were either hearths or clusters of burned rock. Features recorded as hearths were composed of sandstone slabs, while those recorded as fire-cracked rock clusters were composed of quartzite and Potter chert cobbles, and are considered to be boiling stone dumps. At the two sites where there were no features, only the alluvial deposits were tested.

Only two historic sites were recorded within the project area. One of these, Site 41KX66, is a half-dugout with stone walls, and it was completely excavated. Collections from the site, which may date to the 1870's or 80's, include: buttons (3), glass (10), "spring-flower" (1), square nails (4), cartridge cases (32), faunal remains (10), floral remains (6), and charcoal samples (16). The other site, 41KX67, is a rock fence and was merely recorded.

No sites of National Register caliber were found within the project area. No sites, therefore, are recommended for nomination to the National Register of Historic Places. No further archeological investigations are recommended for these three areas to be affected by the Chloride Control Project.

However, should additional development occur around the Truscott Brine Lake, it is recommended that the development areas be searched for archeological remains.

Twelve sites which are outside the project area were visited in order to obtain comparative data. Most of these sites are in Knox County, but a few are in Cottle and King counties. Some of these sites have produced pottery, burials, and other remains not found in the project area.

Although the scope of this project did not include a survey for paleontological resources, six paleontological sites found during the fieldwork were recorded. One site was near the pipeline; two were in the Truscott Reservoir; and three were outside the project area. None of the sites seems to contain a very rich fossil deposit. However, if additional paleontological work is conducted in this area, it is recommended that Site P287 be further examined.

A total of 10,252 archeological specimens (excluding 82 from the historic dugout) were collected during the present study. The specimens have been classified hierarchically on the basis of composition, treatment, function, form, lithic material, and size, as appropriate. The specimen classes are described in the text, inventoried in six tables, and analyzed in 16 additional tables.

On the basis of composition, categories of specimens are: stone (10,100), faunal remains (81), pottery (5), metal (2), and samples (64). On the basis of treatment, categories of stone tools are: chipped (1,793), battered (302), and worn (143). On the basis of form or probable function, categories of stone tools are: arrowpoints (6), dartpoints (49), dartpoints or knives (14), knives (87), flake knives (18), drills (2), crude bifaces (124), gouges (150), turtlebacks (24), choppers (164), chipped pebbles (131), unclassified fragments (10), spokeshaves (47), gravers (68), denticulates (7), scrapers (308), retouched flakes (584), pebble hammerstones (113), discoid hammerstones (25), hammerstone edge fragments (164), manos (125),

grinding slab (1), unidentified ground stone (8), worn flakes (8), and boatstone (1).

Eleven categories of lithic materials have been recognized, as listed earlier. Size is used in classification only in the case of lithic debitage; categories employed are less than 30 mm and more than 30 mm in maximum dimension.

Artifacts not of stone include pottery (5), metal arrow-point (1), and cartridge case (1). The remaining collected items are samples of wood and/or charcoal (11) and soil (53).

It is suggested that most sites in the project area were only briefly occupied by a nomadic people. Occupation was mainly during the Archaic Stage, with light utilization during the NeoIndian Stage. Gathering wild plant foods, supplemented to a small degree by hunting, probably provided the basic economy of these people.

XVI. INTERPRETATIONS

Our archeological investigations in the Truscott area of the Wichita River drainage have begun to provide some insight into the prehistory of this part of the Rolling Plains. Evidence was gathered which may be used to infer a partial chronology for the area, and relationships with cultures to the south, west, and north. From the evidence, we are also able to comment on the ecology, technology, sociology, and ideology of the prehistoric inhabitants.

The sites in the project area may be characterized as predominantly small, scanty, and surficial lithic scatters representing briefly but sometimes repeatedly utilized open camps, processing stations, and quarry/workshops. They occur in a variety of biotic zones and geological locations, nearly always badly scoured by erosion, and are marked primarily by a littering of lithic debitage and fire-cracked rocks. Features are limited to boiling pebble dumps recognizable at a few sites and sandstone slab hearths at a few others. Tools are almost exclusively of stone, and are limited in number and variety, consisting mainly of gouges, choppers, chipped pebbles, hammers, and quartzite manos.

It would be possible to adduce only the most tenuous kinds of circumstantial evidence for the linguistic affiliations or physical types of the prehistoric inhabitants of the region. No burials from which to infer physical type were found during this study. Several burials have been dug in the Truscott area over the years, including historic Indian burials containing copper bracelets and other metal items. These burials are unreported and largely unavailable for study. Analysis of the available information on these earlier finds was beyond the scope of the present research.

A tentative chronology based on dartpoint types has been postulated for the Archaic Stage in the study area. We encountered no evidence for PaleoIndian habitation and only slight evidence for NeoIndian utilization of the area. The primary occupation was during the Archaic Stage. Dartpoints indicate that the heaviest utilization was during the Middle to Terminal substages of the Archaic. Gouges, which are abundant in the project area, also suggest considerable occupation during the Initial and Early substages, although they have been found in sites dated as late Archaic (Leonhardy 1966:12-32). Since we found no stratified sites in the project area, and not enough organic materials for C-14 dating, it has not been possible to check our tentative chronology with these controls. The potential of thermoluminescence dating of the ubiquitous burned rocks in the area remains to be explored.

If gouges can be shown to extend late into the Archaic Stage in the Rolling Plains, then it is possible that there was only scant utilization of the project area during the Initial and Early substages. These substages correspond with a suggested scarcity of bison on the Rolling Plains (Dillehay 1974:180-196). Heavy utilization of the area during the Middle to Terminal substages would correspond to Dillehay's (1974:183) bison Presence Period II. Although an abundance of bison seems to be a logical explanation for a more intensive utilization of the area during the later part of the Archaic, the tool inventory suggests that hunting was never very important in the area.

For the western part of the Rolling Plains nearer the Eastern Caprock Escarpment of the Staked Plains, Etchieson, Speer, and Hughes (1977:16-17) indicate that earlier Archaic sites may be characterized by limited numbers of variable dartpoints, and an abundance of gouges, choppers, hammers, and boiling pebbles. Later sites may be characterized by corner-indented or corner-notched dartpoints, ovate to

trianguloid knives, thick end scrapers, small manos, thin grinding slabs, and hearth stones. This characterization suggests that sites in the project area with high numbers of gouges, choppers, hammers, and boiling pebbles might well possess early components. Artifacts supposedly characteristic of later components, such as knives, end scrapers, grinding slabs, and hearth stones, are not very common in the project area.

Comparison of sites and artifacts in the project area, particularly Site 41KX2, with the Summers Site (Leonhardy 1966) in Oklahoma shows many similarities. Bison bone is preserved at the Summers Site and may indicate a heavier reliance on hunting. Scarcity of bone at sites in our area may be due mainly to poor preservation. The Summers Site resembles in many respects the Lawton Aspect and the Gore Pit Site, also in Oklahoma. Leonhardy (1966) has noted that conservatism is a distinctive trait of the Archaic sites in the Rolling Plains of Oklahoma. The same holds true for the Truscott area.

Leonhardy (1966:32) suggests that the Summers Complex is similar and related to the Edwards Plateau Aspect. Since the study area is located between these two areas, an even closer relationship should exist between the study area and the Edwards Plateau. Such a relationship is suggested most strongly by the occurrence of similar dartpoint types, and by the persistent-and occasionally frequent-occurrence of Edwards flint. Boatstones like the one from the project area are reported for the Edwards Plateau Aspect, and also for the Wylie Focus to the east (Suhm et al 1954). However, drills and axes, which are scarce to non-existent in the study area, are characteristic tool types of the Edwards Plateau Aspect, and of the Carrollton and Elam foci to the east. The burned rock middens characteristic of the Edwards Plateau also were not found in the Truscott area.

Sites occur in the open at Truscott. The local geology does not lend itself to forming rock shelters. Shelter sites are also rare to the north and east. Sites to the south and west are often found in shelters as well as in the open.

In the project area, sites are most commonly found on the higher ground at the foot of the bluffs in the juniper scrub zone. Relatively few wild plant food resources are located in this zone. Most of these resources are located lower and nearer the streams. Some plant and animal food resources, however, are found in all zones.

Scarcity of good water in the project area was probably a major drawback in the prehistoric settlement of the area. Most of the sites are relatively close to a known water source, although many of these sources are salty. There may have been more and better water supplies, such as springs, in the past than now. The seemingly inhospitable environment compared to surrounding regions may be a factor in the scant occupation.

It is apparent from a glance at Table 14 that the lithic technology at the Archaic sites in the study area was not one which contained a diversity of tool classes. The collections have high numbers of gouges, choppers, chipped pebbles, hammers, and quartzite manos. Noticeably low in numbers are projectile points, knives, drills, and end and side scrapers. Apparently hunting was practiced to some degree, but the low numbers of these particular items suggest an economy based on something other than hunting.

The ubiquity and abundance of gouges suggest that some kind of plant processing for food, fiber, and/or wood was a very important activity. Choppers may have been used mainly in a similar kind of processing. Hammers, while suggesting flint knapping, may also have been used in crushing plants, driving stakes, etc. At many sites, in fact, there seem to be too many hammers for the amount of debitage. The high incidence of manos also suggests much preparation of plant

foods. It may be significant that the manos are largely quartzite cobbles from the local gravels rather than sandstone fragments from the local bedrock. Grinding slabs are so rare as to suggest that they were prized possessions which were handled with care and transported from one temporary camp to another.

The kinds and quantities of the tool classes indicate an economy based on gathering wild plant foods, supplemented to a degree by hunting. These people probably followed a seasonal cycle of moving from area to area, collecting the plant resources as they ripened in each area.

Travel and/or trade to the south, west, and northwest is indicated by the occurrence of four lithic materials foreign to the area. These materials are Edwards flint from the Edwards Plateau, Tecovas jasper from the Eastern Caprock Escarpment, Alibates agate from the Canadian River valley near Amarillo, and finally obsidian from sources in New Mexico. The abundance of Edwards flint indicates that the strongest contact is with the Edwards Plateau to the south. Amounts of Tecovas and Alibates suggest only limited contact to the west and northwest. Only one tool fragment of obsidian was found in the project area.

Leonhardy (1966) states that in Oklahoma, the use of Potter chert is a diagnostic trait of the Archaic sites. In the Truscott area the local gravels are the main source of raw materials, with a strong preference for Potter chert and certain other materials, such as purple quartzite. As Leonhardy notes for southwestern Oklahoma Archaic sites, there is a lack of other lithic materials from Oklahoma quarries, such as the Kay County flint, at the sites in our area. Lithic materials in this part of the Rolling Plains indicate cultural influences coming primarily from the south, with minor influences from the west.

As mentioned above, no rock shelters were found in the project area, and no evidence was found for any other kind of shelter. Dwellings probably were some sort of temporary structure made of brush.

There is little evidence from which to infer the social organization of the inhabitants of the area. The small sites with little concentration of material indicate that only small nomadic groups briefly occupied the sites at any time. A few favorite locations probably were visited repeatedly. No permanent sites were discovered within the project area. Most of the sites in the area probably were utilized by small family groups.

Nothing indicative of any kind of ceremonialism was found at any of the sites in the project area. Magical and religious beliefs apparently were seldom manifested in imperishable objects or configurations.

Several sites to the south of the project area along the Salt Fork of the Brazos River were visited. Four of these sites are on high terraces or bluffs overlooking the river. These sites seem to have been more permanent than those recorded in the project area. Much more evidence of NeoIndian occupation was found at these sites, including ceramics, arrow-points, and obsidian. No locations similar to these were investigated along the North Wichita River close to the project area. Whether or not sites of this nature occur near the project area remains to be determined.

In general, it can be suggested that the sites in the project area were only briefly occupied by nomadic gatherers primarily during the Archaic Stage. The gouges may indicate early Archaic occupations in the area in addition to the late Archaic occupations suggested by most of the dartpoints. The small nomadic groups were probably extended families whose economy was based on the seasonal gathering of wild plant

foods, supplemented to a small degree by hunting. Cultural affiliations seem to be closest with Archaic cultures elsewhere in the Rolling Plains, toward the Wichita Mountains to the north and the Staked Plains to the west. Outside influences seem to have been coming chiefly from the Edwards Plateau to the south.

REFERENCES

Archer, Evangeline

- 1968 Stone Boiling. Undergraduate Research Paper, MS on file at the West Texas State University Department of Geology and Anthropology. Canyon.

Asquith, George B.

- 1975 Origin of the Dolomite and Chert. In Archeological Salvage at Pipeline Construction in Alibates National Monument, by Jack T. Hughes and Kim E. Taylor. Report submitted to the National Park Service and Colorado Interstate Gas Company.

Barbour, E. H., and C. B. Schultz

- 1941 A New Fossil Bovid from Nebraska With Notice of a New Bison Quarry in Texas. Nebraska State Museum Bulletin, Vol. 2, No. 7, pp. 63-68.

Barr, T. P.

- 1966 The Pruitt Site: A Late Plains Woodland Manifestation in Murray County, Oklahoma. Oklahoma River Basin Survey Project, Archeological Site Report No. 5, pp. 1-26. University of Oklahoma Research Institute. Norman.

Bell, Robert E.

- 1958 Archaeological Investigations at the Boat Dock Site, Ma-1, in the Lake Texhoma Area, Marshall County, Oklahoma. Oklahoma Anthropological Society Bulletin, Vol. 6, pp. 37-47. Oklahoma City.
- 1960 Guide to the Identification of Certain American Indian Projectile Points. Oklahoma Anthropological Society Special Bulletin No. 2. Oklahoma City.

Bell, R. E., and D. A. Barreis

- 1951 A Survey of Oklahoma Archeology. Texas Archeological and Paleontological Society Bulletin, Vol. 22, pp. 7-100. Lubbock.

Bell, R. E., and T. Bastian

- 1967 Survey of Potential Wichita Archaeological Remains in Oklahoma. In A Pilot Study of Wichita Indian Archeology and Ethnohistory, assembled by R. E. Bell, E. B. Jelks, and W. W. Newcomb, pp. 119-127. Dallas.

Blair, W. Frank

- 1950 The Biotic Provinces of Texas. The Texas Journal of Science, Vol. 2, No. 1, pp. 93-117. Austin.

Bowers, Roger Lee

- 1975 Petrography and Petrogenesis of the Alibates Dolomite and Chert (Permian), Northern Panhandle of Texas. Master's thesis, The University of Texas at Arlington.

Brooks, Derl L., and Ronald R. McKown

- 1972 The Fauna. In Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 2-23 to 2-29. West Texas State University. Canyon.

Bryan, Kirk, and Cyrus N. Ray

- 1938 Long Channelled Point Found in Alluvium Beside Bone of Elephas columbi. Texas Archeological and Paleontological Society Bulletin, Vol. 10, pp. 263-268.

Bryant, Vaughn M., Jr.

- 1977 Soil Test Report. Texas Agricultural Extension Service, Texas A&M University System. MS on file at the Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Burton, R. J., and S. S. Burton

- 1971 An Archaeological Survey of the Lake Altus Shoreline, Greer and Kiowa Counties. Oklahoma River Basin Survey, Archaeological Survey Report No. 12. Norman.

Chandler, C. K.

1974. Use Wear Analysis of "Clear Fork" Tools From the Falcon Reservoir Area, Southern Texas. *La Tierra*, Vol. 1, No. 4, pp. 15-21.

Crawford, Daymond

- 1975 Site Survey Forms. On file at the Texas Archeological Research Laboratory. Austin.

Crook, Wilson, W., Jr.

- 1955 Scottsbluff Points in the Obshner Site near Dallas, Texas. *Texas Archeological Society Bulletin*, Vol. 26, pp. 75-100.

Crook, Wilson W., Jr., and R. K. Harris

- 1952 Trinity Aspect of the Archaic Horizon: The Carrollton and Elam Foci. *Texas Archeological and Paleontological Society Bulletin*, Vol. 23, pp. 7-38.

Daugherty, Franklin W.

- 1972 Description of the Basin. *In* Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 2-1 to 2-6. West Texas State University. Canyon.

Daugherty, Franklin W., and Robert M. Winn

- 1972 Geomorphic and Hydraulic Characteristics of the Streams General. *In* Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 2-7 to 2-10. West Texas State University. Canyon.

Dillehay, Tom D.

- 1974 Late Quaternary Bison Population Changes on the Southern Plains. *Plains Anthropologist*, Vol. 19, No. 65, pp. 180-196.

Duffield, Lathel F., and Edward B. Jelks

- 1961 The Pearson Site: A Historic Indian Site in Iron Bridge Reservoir, Rains County, Texas. *Archeology Series No. 4*, Department of Anthropology, The University of Texas. Austin.

Epstein, F. J.

- 1969 The San Isidro Site: An Early Man Campsite in Nuevo Leon, Mexico. The University of Texas Anthropology Series 7.

Etchieson, Gerald Meeks, Roberta D. Speer, and Jack T. Hughes

- 1977 An Archeological Survey of Certain Tracts in and near Caprock Canyons State Park in Eastern Briscoe County, Texas. Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Ferring, Reid C., Daniel J. Crouch, and Towana D. Spivey

- 1976 An Archaeological Reconnaissance of the Salt Plains Areas of Northwestern Oklahoma. Contributions of the Museum of the Great Plains, No. 4. Lawton.

Geological Society of America

- 1951 Rock-Color Chart.

Gould, Charles N.

- 1907 The Geology and Water Resources of the Western Portion of the Panhandle of Texas. U.S. Geological Survey Water-Supply and Irrigation Paper No. 191. Washington, D.C.

Green, Jimmie L., and Robert M. Winn

- 1972 Degradation of Soils. In Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 3-10 to 3-20. West Texas State University. Canyon.

Guffee, Eddie J.

- 1976 The Merrell-Taylor Village Site: An Archeological Investigation of Pre-Anglo, Spanish-Mexican Occupation of Quitaque Creek in Floyd County, Texas. Archeological Research Laboratory, Llano Estacado Museum, Wayland Baptist College. Plainview.

Gunnerson, James H. and Dolores A.

- 1971 Apachean Culture History and Ethnology. University of Arizona Anthropological Papers, No. 21, pp. 7-27.

Harrison, Billy R., and Henry C. Smith

- 1975 A Test Excavation of the Lake Theo Site, Briscoe County, Texas. *Panhandle-Plains Historical Review*, Vol. 48, pp. 70-106. Canyon.

Hester, James J.

- 1972 Blackwater Locality No. 1: A Stratified Early Man Site in Eastern New Mexico. Fort Burgwin Research Center, Southern Methodist University. Ranchos de Taos, New Mexico.

Hester, Thomas R., editor

- 1976 The Texas Archaic: A Symposium. Center for Archeological Research Special Report No. 2. The University of Texas at San Antonio.

Hester, Thomas R., Delbert Gilbow, and Alan D. Albee

- 1973 A Functional Analysis of "Clear Fork" Artifacts from the Rio Grande Plain, Texas. *American Antiquity*, Vol. 38, No. 1, pp. 90-96.

Higgins, Larry C., and Robert A. Wright

- 1972 The Flora. In Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 2-11 to 2-22. West Texas State University. Canyon.

Hofman, Jack L.

- 1971 A Surface Survey of the Ross Site, Cd-69, Caddo County, Oklahoma. *Oklahoma Anthropological Society Bulletin*, Vol. 20, pp. 101-114. Oklahoma City.
- 1973 "Cd-177: A Small Archaic Camp in Western Oklahoma." *Oklahoma Anthropological Society Bulletin*, Vol. 22, pp. 171-206. Oklahoma City.
- 1977 A Technological Analysis of Clear Fork Gouge Production. *Oklahoma Anthropological Society Bulletin*, Vol. 26, pp. 105-121. Oklahoma City.

Hood, H. Charles, and Jack T. Hughes

- 1975 An Archeological Survey in the Lakeview Watershed. Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

House, John H., and James W. Smith

- 1975 Experiments in Replication of Fire-cracked Rock.
In Schiffer and House, assemblers, The Cache River
Archeological Project: An Experiment in Contract
Archeology. Arkansas Archeological Survey Research
Series No. 8. Fayetteville

Howard, Calvin D.

- 1973 A Study of the Clear Fork Gouge. Texas Archeological
Society Bulletin, Vol. 44, pp. 51-60.

Howard, E. B.

- 1935 Evidence of Early Man in North America. The Museum
Journal, The University of Pennsylvania, Vol. 24,
Nos. 2-3.

Hughes, David T.

- 1977 Analysis of Certain Prehistoric Bison Kills in the
Texas Panhandle and Adjacent Areas. Master's thesis,
Department of Anthropology, University of Arkansas.
Fayetteville.

Hughes, Jack T.

- 1942 An Archeological Report of the Harrell Site of North
Central Texas. Master's thesis, The University of
Texas. Austin.
- 1955 Little Sunday: An Archaic Site in the Texas Pan-
handle. Texas Archeological Society Bulletin,
Vol. 26, pp. 55-74.
- 1959 Archeological Survey of Greenbelt Reservoir, Donley
County, Texas. Report submitted to the National
Park Service by the Panhandle-Plains Historical
Museum. Canyon.
- 1962 Lake Creek: A Woodland Site in the Texas Panhandle.
Texas Archeological Society Bulletin, Vol. 32,
pp. 65-84.
- 1968 Prehistory of the Caddoan-speaking Tribes. Ph.D.
dissertation. Columbia University, New York.

Hughes, Jack T.

- 1972 History and Prehistory. In Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 2-30 to 2-46. West Texas State University. Canyon.
- 1973 Archeology. In Environmental Inventory and Assessment of Areas VI, IX, XIII, XIV, and XV, Red River Chloride Control Project, Oklahoma and Texas. Report submitted to the U.S. Army Corps of Engineers by West Texas State University. Canyon.
- 1975 Some Early and Northerly Occurrences of the Clear Fork Gouge. Paper read at the Reunion Sobre Aspectos de Arqueologia e Historia del Noreste, Monterrey, Mexico, April 23-26, 1975.
- 1976 The Panhandle Archaic. In The Texas Archaic: A Symposium, edited by Thomas R. Hester, Center for Archeological Research Special Report No. 2, pp. 28-38. The University of Texas at San Antonio.
- In press Archeology of Palo Duro Canyon. Panhandle-Plains Historical Review. Canyon.

Hughes, Jack T., and Charles Hood

- 1976 Archeological Testing in the Lakeview Watershed, Hall County, Texas. Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Hughes, Jack T., H. Charles Hood, and Billy Pat Newman

- 1978 Archeological Testing in the Red Deer Creek Watershed in Gray, Roberts, and Hemphill Counties, Texas. Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Hughes, Jack T., and Patrick S. Willey (assemblers)

- In press Salvage Archeology at Mackenzie Reservoir. To be published by the Texas Historical Commission. Austin.

Jackson, A. T.

- 1938 The Fall Creek Sites (with Additional Buchanan Lake Sites by Arthur M. Woolsey). The University of Texas Publication No. 3802, Anthropological Papers, Vol. 3, No. 1. Austin.

Johnson, Eileen

- 1976 Investigations into the Zooarcheology of the Lubbock Lake Site. Ph.D. dissertation, Texas Tech University. Lubbock.

Johnson, Eileen, Vance T. Holliday, Michael J. Kaczor, and Robert Stuckenrath

- 1977 The Garza Occupation at the Lubbock Lake Site. Texas Archeological Society Bulletin, Vol. 48, pp. 83-109.

Johnston, C. Stewart

- 1939 A Report on the Antelope Creek Ruin. Texas Archeological and Paleontological Society Bulletin, Vol. 11, pp. 190-202.

Katz, Susanna R., and Paul R.

- 1976 Archeological Investigations in Lower Tule Canyon, Briscoe County, Texas. Office of the State Archeologist, Archeological Survey Report No. 16. Austin.

Kegley, George

- 1977 Letter to Dr. Jack T. Hughes, on file at the Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Kelley, J. Charles

- 1947 The Cultural Affiliations and Chronological Position of the Clear Fork Focus. American Antiquity, Vol. 13, No. 2, pp. 97-109.

Krieger, Alex D.

- 1946 Culture Complexes and Chronology in Northern Texas. The University of Texas Publication No. 4640. Austin.

Lee, Ernest

- 1964 A Woman on the Buffalo Range: The Journal of Ella Dumont. West Texas Historical Association Year Book 40, pp. 146-167.

Leonhardy, F. C.

- 1966a Domebo: A PaleoIndian Mammoth Kill Site in the Prairie Plains. Contributions of the Museum of the Great Plains, No. 1. Lawton.
- 1966b Test Excavations in the Mangum Reservoir Area of Southwestern Oklahoma. Contributions of the Museum of the Great Plains, No. 2. Lawton.

Lintz, Christopher

- 1974 An Analysis of the Custer Focus and Its Relationship to the Plains Village Horizon in Oklahoma. Department of Anthropology, University of Oklahoma. Papers in Anthropology, Vol. 15, No. 2, pp. 1-72. Norman.

Lobeck, A. K.

- 1948 Physiographic Diagram of the United States. The Geographical Press. Maplewood, New Jersey.

Long, Joseph K., III.

- 1959 Site Survey Form. On file at the Texas Archeological Research Laboratory. Austin.

Malone, James M.

- 1970 Archeological Reconnaissance in the Mackenzie Reservoir Area of Tule Canyon. Texas Historical Survey Committee and Texas Water Development Board Archeological Survey Report No. 8. Austin.

Malone, James M., and Alton K. Briggs

- 1970 Archeological Reconnaissance in the Miller Creek Reservoir Area. Texas State Historical Survey Committee and Texas Water Development Board Archeological Survey Report No. 6. Austin.

McCormick, Olin F.

- 1976 The Archaic Period in North Central Texas. In
The Texas Archaic: A Symposium, edited by Thomas
R. Hester, Center for Archeological Research Special
Report No. 2, pp. 39-45. The University of Texas
at San Antonio.

McFarland, A. V.

- 1968 Site Survey Forms. On file at the Texas Archeo-
logical Research Laboratory. Austin.

Moorehead, Warren K.

- 1931 Archaeology of the Arkansas River Valley. New Haven.

Nunley, J. P., and T. R. Hester

- 1966 Preliminary Archeological Investigations in Dimmit
County, Texas. Texas Journal of Science, Vol. 18,
pp. 233-253.

Olsen, Stanley J.

- 1963 Dating Early Plain Buttons by Their Form. American
Antiquity, Vol. 28, No. 4, pp. 551-554.

Parsons, Mark L.

- 1967 Archeological Investigations in Crosby and Dickens
Counties, Texas During the Winter, 1966-67. Texas
State Building Commission Archeology Program Report
No. 7.

Patterson, Patience E.

- 1977 A Lithic Reduction Sequence: A Test Case in the
North Fork Reservoir Area, Williamson County, Texas.
Texas Archeological Society Bulletin, Vol. 48,
pp. 53-82.

Pearson, Emerson L.

- 1974 Soil Characteristics of an Archeological Deposit:
Randall County, Texas. Texas Archeological Society
Bulletin, Vol. 45, pp. 151-189.

Perino, Gregory

- 1968 Guide to the Identification of Certain American
Indian Projectile Points. Oklahoma Anthropological
Society Special Bulletin No. 3. Oklahoma City.

Portis, John, Fern Portis, Pat Bills, and Nelda Bills

- 1968 A Surface Site in Scurry County (41-S.C.). Transactions of the Fourth Regional Archeological Symposium for Southeastern New Mexico and Western Texas, Iraan Archeological Society, pp. 60-64.

Poteet, Sybil

- 1938 The Occurrence and Distribution of Beveled Knives. Texas Archeological and Paleontological Society Bulletin, Vol. 10, pp. 245-262.

Quinn, Jean, and Jane Holden

- 1949 Caves and Shelters in Dawson and Borden Counties. Texas Archeological and Paleontological Society Bulletin, Vol. 20, pp. 115-131.

Ray, Cyrus N.

- 1929 A Differentiation of the Prehistoric Cultures of the Abilene Region. Texas Archaeological and Paleontological Society Bulletin, Vol 1, pp. 7-22.
- 1930 Report on Some Recent Archaeological Researches in the Abilene Section. Texas Archaeological and Paleontological Society Bulletin, Vol. 2, pp. 45-58.
- 1938 The Clear Fork Culture Complex. Texas Archeological and Paleontological Society Bulletin, Vol. 10, pp. 193-207.
- 1941 Various Types of Clear Fork Gouges. Texas Archeological and Paleontological Society Bulletin, Vol. 13, pp. 152-162.
- 1945 Stream Bank Silts of the Abilene Region. Texas Archeological and Paleontological Society Bulletin, Vol. 16, pp. 117-147.
- 1948 The Facts Concerning the Clear Fork Culture. American Antiquity, Vol. 13, No. 4, pp. 320-322.

Ray, Cyrus N., and E. B. Sayles

- 1941 An Agreement on Abilene Region Terminology. Texas Archeological and Paleontological Society Bulletin, Vol. 13, pp. 175-176.

Redder, Albert J.

- 1973 Site Survey Forms. On file at the Texas Archeological Research Laboratory. Austin.
- 1977 Food and Fiber Resources from Knox County, Texas. MS on file at the Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Riggs, Aaron D., Jr.

- 1966 The Reed Shelter, A Petroglyph Site in Garza County, Texas. Transactions of the Second Regional Archeological Symposium for Southeastern New Mexico and Western Texas, Midland Archeological Society Bulletin No. 1, pp. 44-58.

Runkles, Frank A.

- 1964 The Garza Site: A Neo-American Campsite Near Post, Texas. Texas Archeological Society Bulletin, Vol. 35, pp. 101-125.

Sayles, E. B.

- 1935 An Archeological Survey of Texas. Medallion Papers, No. 17. Gila Pueblo, Globe, AZ.

Schiffer, Michael D., and John H. House (assemblers)

- 1975 The Cache River Archeological Project: An Experiment in Contract Archeology. Arkansas Archeological Survey Research Series, No. 8.

Schultz, Gerald E.

- 1972 Paleontology. In Ark-Red Chloride Control Part 1, Areas VII, VIII, and X, Texas, pp. 2-47 to 2-56. West Texas State University. Canyon.

Sellards, E. H., Glen L. Evans, and Grayson E. Meade

- 1947 Fossil Bison and Associated Artifacts from Plainview, Texas, with Description of Artifacts by Alex D. Krieger. Geological Society of America Bulletin, Vol. 58, pp. 927-954.

Shafer, Harry J.

- 1977 Late Prehistory of Central Texas. South Plains Archeological Society Bulletin, Vol. 3, pp. 18-24.

Sharp, Jay W.

- 1969 An Indian Burial. This is West Texas, West Texas Chamber of Commerce, Vol. 3, No. 4, pp. 18-22.

Shawn, Ronnie A.

- 1971 Morgan Creek Mortar Camp. Transactions of the Sixth Regional Archeological Symposium for Southeastern New Mexico and Western Texas, El Paso Archeological Society, pp. 49-62.

Shiner, Joel L.

- 1975 The Clear Fork Gouge Revisited. Texas Archeological Society Bulletin, Vol. 46, pp. 179-188.

Skinner, S. Alan, and Gerald K. Humphreys

- 1973 The Historic and Prehistoric Archaeological Resources of the Squaw Creek Reservoir. Southern Methodist University Contributions in Anthropology, No. 10.

Sommer, Arnold E.

- 1971 Big Spring Site. Transactions of the Sixth Regional Archeological Symposium for Southeastern New Mexico and Western Texas, El Paso Archeological Society, pp. 111-122.

Spivey, Towana, C. Reid Ferring, Daniel J. Crouch, and Kathy Franklin

- 1977 Archeological Investigations Along the Waurika Pipeline. Contributions of the Museum of the Great Plains, No. 5. Lawton.

Suhm, Dee Ann

- 1960 A Review of Central Texas Archeology. Texas Archeological Society Bulletin, Vol. 29, pp. 63-107.

Suhm, Dee Ann, Alex D. Krieger, and Edward B. Jelks

- 1954 An Introductory Handbook of Texas Archeology. Texas Archeological Society Bulletin, Vol. 25.

Suhm, Dee Ann, and Edward B. Jelks

- 1962 Handbook of Texas Archeology: Type Descriptions. Special Publication No. 1, Texas Archeological Society, and Bulletin No. 4, Texas Memorial Museum. Austin.

Tunnell, Curtis D.

- 1964 Two Burials from the Jim Arnold Site in Northwest Texas. Texas Archeological Society Bulletin, Vol. 35, pp. 83-94.
- 1975 Fluted Projectile Point Production as Revealed by Lithic Specimens from the Adair-Steadman Site in Northwest Texas. Texas Historical Commission, Office of the State Archeologist, Special Report No. 18. Austin.

Tunnell, Curtis D., and Jack T. Hughes

- 1955 An Archaic Bison Kill in the Texas Panhandle. Panhandle-Plains Historical Review, Vol. 28, pp. 63-70. Canyon.

Wedel, Waldo R.

- 1975 Chalk Hollow: Culture Sequence and Chronology in the Texas Panhandle. Actas del 41 Congreso Internacional de Americanistas, Vol. 1, pp. 270-278. Institute Nacional de Antropologia e Historia, Mexico, D.F.

Weir, Frank A.

- 1976a The Central Texas Archaic. Ph.D. dissertation. Washington State University, Pullman, Washington.
- 1976b The Central Texas Archaic Reconsidered. In The Texas Archaic: A Symposium, edited by Thomas R. Hester, Center for Archeological Research Special Report No. 2, pp. 60-66. The University of Texas at San Antonio.

West Texas State University

- 1972 Ark-Red Chloride Control Project Part 1, Areas VII, VIII, and X, Texas. Canyon.

West Texas State University

- 1973 Environmental Inventory and Assessment: Areas VI, IX, XIII, XIV, and XV, Red River Chloride Control Project, Oklahoma and Texas. Canyon.

Whittington, Gordon

- 1977 Desert Holly. Texas Parks and Wildlife Magazine, Vol. 35, No. 5, pp. 11-13.

Willey, Patrick S., and Jack T. Hughes

- 1975 An Archeological Survey of an Isolated Section in Lake Theo State Park, Briscoe County, Texas. Archeological Research Laboratory, Killgore Research Center, West Texas State University. Canyon.

Witte, Adolph Henry

- 1942 Channelled Points from Clear Fork Site in North Texas Texas Archeological and Paleontological Society Bulletin, Vol. 14, pp. 27-31.
- 1955 A Double Indian Burial from Donley County, Texas. Panhandle-Plains Historical Review, Vol. 28, pp. 82-86.

Word, James H.

- 1963 Floydada Country Club Site, 41FL1. South Plains Archeological Society Bulletin, Vol. 1, pp. 37-63.
- 1965 The Montgomery Site in Floyd County, Texas. South Plains Archeological Society Bulletin, Vol. 2, pp. 55-102.
- 1970 Site Survey Form. On file at the Texas Archeological Research Laboratory. Austin.

Word, James H., Emmett Shedd, and Claude Brown

- 1966 Site Survey Forms. On file at the Texas Archeological Research Laboratory. Austin.

Word, James H., and Anne Fox

- 1975 The Cogdell Burial in Floyd County, Texas. Texas Archeological Society Bulletin, Vol. 46, pp. 1-63.

Wormington, H. M.

- 1957 Ancient Man in North America. The Denver Museum
of Natural History Popular Series, No. 4.

Wyckoff, Don G., editor

- 1973 Bulletin of the Oklahoma Anthropological Society,
Vol. 22.

Wyckoff, Don G., and L. Taylor

- 1971 The Pumpkin Creek Site: An Early Archaic Camp on
the Southern Plains Border. Plains Anthropologist,
Vol. 16, No. 51, pp. 20-51. Topeka.

APPENDIX I. GRAIN-SIZE ANALYSIS OF SOIL SAMPLES

by Scott J. Taylor

INTRODUCTION

Eleven soil samples from site nos. KX4, 5, and 34 were received for grain-size analysis. Each sample weighed approximately 60 grams. The samples were disaggregated, washed, sieved at quarter-phi intervals down to 4.5 phi, and weighed. Weathering in the soil zone leaves some question about the validity of some of the samples. Samples with a high colloidal clay content are considered invalid. Colloidal clay is defined as the amount of the sample that is washed out while preparing the sample for sieving. Results of the grain-size analysis (Asquith 1974, Visser 1969) are presented below.

ANALYSIS

Sample No. 1. KX4.143, S1-2/W26-27, 10-20 cm. The sample contained 29% colloidal clay. The plots of this sample are slightly trimodal on the histogram and Visser plots. The Visser plot indicates a reworked fluvial sand. The sample is interpreted to be a heavily weathered reworked fluvial sand.

Sample No. 2. KX4.144, S1-2/W26-27, 0-10cm. The sample is 22% colloidal clay. The plots indicate that the sample is bimodal. The Visser plot indicates a fluvial sand. The sample is interpreted to be a highly weathered reworked fluvial sand that has had aeolian sand added to it after deposition.

Sample No. 3. KX5.62, S1-2/E11-12, 10-20cm. The sample contained 27% colloidal clay. The plots of this sample are trimodal on both the histogram and the Visser plot. The Visser plot indicates that the sample is a reworked fluvial sand. The high amounts of fine particles in the sample are probably due to weathering and aeolian sand contaminating the sample after it was deposited.

Sample No. 4. KX5.63, S1-2/E11-12, 20-30cm. This sample is 19% colloidal clay. The sample is strongly bimodal on the histogram and Visher plot. The Visher plot indicates a fluvial sand that has been reworked. The sample is interpreted to be a reworked fluvial sand that has had aeolian sands introduced after deposition.

Sample No. 5. KX5.64, S1-2/E11-12, 0-10cm. The sample is 19% colloidal clay. The sample is bimodal on the histogram and Visher plots. The Visher plot indicates a fluvial sand. The sample is interpreted to be a reworked fluvial sand with aeolian sand contamination.

Sample No. 6. KX34.47, S6-7/E15-16, 10-20cm. The sample is 31% colloidal clay and is considered invalid.

Sample No. 7. KX34.48, S6-7/E15-16, 20-30cm. Thirty-six percent colloidal clay was found in this sample. The sample is considered invalid.

Sample No. 8. KX34.49, S6-7/E15-16, 30-40cm. This sample contained 53% colloidal clay. With this high a colloidal clay content, the sample is considered invalid.

Sample No. 9. KX34.57, S2-3/W31-32, 10-20cm. The sample is 40% colloidal clay and is considered invalid. However, the sample plots as strongly bimodal. The plot closely resembles the plots for sample nos. 3 and 4. It is possible that this sample is a reworked fluvial sand.

Sample No. 10. KX34.59, S2-3/W31-32, 20-30cm. The sample is invalid due to its 33% colloidal clay content.

Sample No. 11. KX34.61, S2-3/W31-32, 30-40cm. The sample is 31% colloidal clay and invalid.

SUMMARY

The samples that are considered valid are nos. 1-5, from site nos. KX4 and 5. The valid samples are all interpreted to be weathered reworked fluvial sands that have had aeolian sands added to them after deposition.

The samples that are considered invalid due to high colloidal clay content are nos. 6-11, all from Site No. KX34. Of these samples, only Sample No. 9 resembled the valid samples.

REFERENCES

Asquith, G. B., 1974, Manual of Sedimentological Computer Programs: West Texas State University Press, Canyon, Texas.

Visher, G. S., 1969, Grain Size Distributions and Depositional Processes: Jour. of Sed. Pet., v. 39, p. 1074-1106.

APPENDIX II. DENDROCHRONOLOGY AT SITE 41KX66

by Robert A. Wright

Charcoal material from the dugout was examined with the hope of identifying the growth rings by the actual years in which they were formed. This involved an evaluation of the possibility of crossdating the ring sequences of the charcoal with the ring sequences of increment cores taken from living juniper trees within one-fourth mile of the site. To this end, numerous pieces of charcoal and six increment cores were examined.

Crossdating is the location of matching growth ring patterns from different specimens. This allows one to set a calendar date to rings in archaeological material, such as charcoal, by matching the rings in the material with the corresponding rings in living material. Since the outermost ring from the living material has a known calendar date, the dates of the other rings can be identified by counting back. Then the dates of the rings of the archaeological material can be identified by crossdating them with the rings of known dates from the living material. The desiderata for successful crossdating are

1. sequences of sufficient length,
2. patterns of wide and narrow rings (sensitivity), which are a reflection of variations in local climatic conditions, and
3. few absent rings (ring for a particular year not found in a given specimen) and few multiple rings (two or more rings formed during one growing season).

Most of the pieces of charcoal had short sequences of 10 to 15 rings. Even the larger pieces had sequences of only 20 to 25 rings. There was not very much variation in the width of the rings, except for the gradual decrease in width from the center to the outside that is associated with age. The longest increment core had approximately 100 annual rings,

but there seemed to be many multiple rings. The sequences from the living material were sensitive. Crossdating the living material with the archaeological material was impossible because

1. the ring sequences were of insufficient length,
2. the charcoal material was insensitive, and
3. there was no way to positively identify absent and multiple rings.

To enhance dendrochronological dating of archaeological sites in the future, the following recommendations are made:

1. If at all possible the entire cross-section from at least one living tree should be obtained. This would help overcome the problem of locally absent rings (rings absent along a particular radius, but present elsewhere on the section) and facilitate identification of multiple rings.

2. Cores sampled with a Swedish increment borer should be taken from at least two different radii along the circumference of each tree sampled. This will be useful in identification of locally absent rings.

3. Cores should be placed in soda straws or corrugated cardboard sections and taped in place.

4. Cores should be taken from trees of various ages. Often rings that are absent in older trees will be present as very small rings in younger trees.

5. Trees from which cross-sections or cores are obtained should

- a. be at such a distance from other trees that competition does not materially affect the ring pattern,
- b. have no apparent subsurface supply of water (so that the ring sequence will be sensitive), and
- c. have no apparent injury or disease.

6. Site data that should be recorded for each cross-section and core are

- a. exact geographic location,
- b. slope information (steepness and relative position along the slope),
- c. slope aspect,
- d. soil information,
- e. nature of surrounding vegetation, and
- f. information on the characteristics of the tree sampled (such as diameter of stem, height, etc.).

7. Charcoal should be obtained from a number of archaeological sites in the same general area. Crossdating of these specimens may allow at least the establishment of a "floating" chronology (one for which no calendar dates have been assigned).

APPENDIX III. ANALYSIS OF THE SEYMOUR GRAVEL

by H. Charles Hood

INTRODUCTION

In the Wichita River drainage of north-central Texas, the Seymour Gravel is a lithologic member of the more regional Seymour Formation, of Pleistocene age. In the Truscott Reservoir area the Seymour Gravel occurs as a sporadic covering of alluvial outwash materials capping some of the Permian benches, and, to a lesser extent, the Pleistocene terraces.

Two distinct source beds are believed to have provided material for the Seymour Gravel. These are (1) the Potter Gravel member of the Ogallala Formation, Pliocene in age, and (2) siliceous conglomerates of the Dockum Group, Upper Triassic in age.

The Potter Gravel was described as the Potter Formation by Patton (1923) for certain exposures of "coarsely stratified and partly consolidated sand and gravel" which are found in the basal part of the Pliocene Ogallala Formation. The type locality is along the Canadian River in Potter County, where from 75 to 100 feet of Potter Gravel is exposed. The Potter Gravel thins to the south, where only several feet are exposed in Palo Duro Canyon, Randall County, in the central Texas Panhandle.

The Potter Gravel was deposited along with the rest of the Ogallala Formation as a vast outwash alluvial plain, which underlies the modern High Plains surface. Analysis of the Potter Gravels (Patton, 1923) indicates a source area to the west, along the foothills of the Rocky Mountains, approximately 800 km (500 miles) west of the project area.

A variety of rocks are found within the Potter Gravel. Most abundant are quartzites and metaquartzites. These quartzites and metaquartzites are of two general types: (1) the

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coarser, more grainy type, and (2) the finer, more uniform type. The coarse type indicates a lower degree of metamorphism, and in many cases exhibits a texture similar to the original sandstone before metamorphism. The fine-textured, sometimes almost glassy type, indicates a much higher degree of metamorphism. Material of this kind was favored for chipped stone implements.

One of the more heavily favored lithic materials by prehistoric man found in the Potter Gravel is the so-called "Potter chert." Petrographic analysis by Hood in Etchieson et al (1977) has shown this material to be a dense gray to brown, siliceous siltstone, composed almost entirely of highly angular, poorly sorted quartz grains, and apparently cemented with silica. It exhibits a very fine-grained, uniform texture. This material may have originated in the Jurassic Morrison Formation far to the west, and was subsequently redeposited first in the Potter Gravel and then in the Seymour Gravel.

Probably from the Potter Gravel is a variety of purple quartzite, distinguished by its fine, sometimes almost glassy texture. This material is rare in the Seymour Gravel, but was certainly favored for chipped stone implements. Limited chipping tests were made by Mr. Sandy Watts, an expert flint-knapper. He found that, of the available quartzite material tested, purple quartzite was clearly the easiest to work and produced the best results.

Silicified wood and minor amounts of jasper and chert are also noted in the Potter Gravel. Small amounts of limestone, volcanic rock, and sandstone are usually present. In practically all cases, material in the Potter Gravel is well-rounded, attesting to the great distance from source area to deposit.

It is believed that the majority of material found in the Seymour Gravel was redeposited from erosion of the Potter Gravel. Most of the quartzite found in the Seymour Gravel

probably originated from the Potter Gravel, as did the "Potter chert," the colorful silicified wood, and the jasper.

Certain lithologic units located within the Upper Triassic Dockum Group provide a minor but important contribution to rocks found in the Seymour Gravel. The Dockum is characterized by a number of sandstone and conglomerate ledges, interbedded with shale and mudstone. Roth (1943) states that siliceous conglomerates are found in the Dockum from Motley County southward, while clay-ball or lime-mud conglomerates are found from Motley County northward. The siliceous conglomerates are approximately 115 km (70 miles) northwest of the project area.

The siliceous conglomerates of the Dockum Group were deposited as channel-bar or channel-lag stream sediments. Different ideas exist as to the ultimate source area of the pebbles contained in these siliceous conglomerates. Roth (1943), on the basis of fusulinids found in chert pebbles from a siliceous conglomerate outlier in Motley County, suggests the source area to be far to the southwest near the Marathon Uplift in Trans-Pecos Texas. Adams (1929), however, believes that the chert was probably derived from Pennsylvanian and Permian limestones to the east. Nevertheless, the well-rounded pebbles again attest to the great amount of transportation undergone from source area to deposit.

A variety of rocks are found in the siliceous Dockum conglomerates. Most are siliceous pebbles such as quartzites and cherts. Of particular interest is a variety of smooth, fine-textured, white or "milky" quartz. This type of quartz is fairly well-represented in the Seymour Gravel. Its existence in the siliceous Dockum conglomerates and not in the Potter Gravel indicates that the Dockum supplied at least a minor portion of the constituents present in the Seymour Gravel. A specimen of fusulinid-bearing chert was also noted during laboratory analysis, which gives additional evidence of the Dockum as a source bed for the Seymour Gravel.

Undoubtedly some of the other quartzite varieties found within the Seymour Gravel also originated from siliceous Dockum conglomerates.

ANALYSIS

In order to better understand the lithic content of the gravels of the Seymour Formation, two bulk samples were collected and statistically analyzed. The two samples were taken from a sheet of gravel lying on Permian bedrock at distances of about 150 and 175 m to the southeast of Site 41KX5. Two 1-meter squares were staked out and all of the surface gravel within the squares was collected. One of the squares was chosen at random; the other was selected for its inclusion of some unusually large elements.

Lithic and size analyses of the two samples were very similar (see Table 1). Standard $\frac{1}{2}$ -, 1-, and 2-inch sieves were used to sort the samples. Pebbles in each size range were then weighed. All pebbles 1 inch or larger in size were identified as to general rock type.

Total weight of each size range was similar for the two samples, except in the "over 2-inch" category (see Fig. 1). As the spot for the selected sample was chosen on the basis of a relatively high frequency of large cobbles, the total weight of the "over 2-inch" fraction was much greater in the selected sample.

Rocks of the quartzite/quartz schist category were by far the most abundantly occurring type in the 1-inch and greater size of both samples. The coarse, grainy type of quartzite was predominant over the finer, more uniform kind. Very minor amounts of limestone, chert, volcanic rock, and silicified wood were present in the samples.

Table 1. Lithic Analysis of Gravel Samples from the Seymour Formation.

	<u>Random Sample</u>		<u>Selected Sample</u>	
<u>Size Range</u>	<u>Wt/lbs.</u>	<u>Percent</u>	<u>Wt/lbs.</u>	<u>Percent</u>
Less than 1/2 in.	4.38	9.87	4.56	5.79
1/2 in. - 1 in.	11.38	25.64	14.94	18.96
1 in. - 2 in.	21.06	47.45	22.06	27.99
over 2 in.	<u>7.56</u>	<u>17.04</u>	<u>37.25</u>	<u>47.26</u>
TOTALS	44.38	100.00	78.81	100.00

<u>Lithology, 1-2 in. size</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Quartzite/quartz schist	150	96.16	137	93.84
1. Coarse, grainy	89	57.06	91	62.33
2. Fine, uniform	61	39.10	46	31.51
a. Milky quartz	10	6.40	7	4.79
b. Purple quartzite	6	3.85	5	3.43
c. Other smooth quartzite	45	28.85	34	23.29
Limestone	4	2.56	2	1.37
Chert			4	2.74
Potter chert			2	1.37
Fusulinid-bearing chert	1	0.64		
Volcanic-feldspathic rhyolite	1	0.64		
Silicified wood			1	0.68

<u>Lithology, over 2 in. size</u>				
Quartzite/quartz schist	6	75.00	22	81.48
1. Coarse, grainy	6	75.00	16	59.26
2. Fine, uniform			6	22.22
Potter chert	2	25.00	4	14.81
Silicified wood			1	3.71

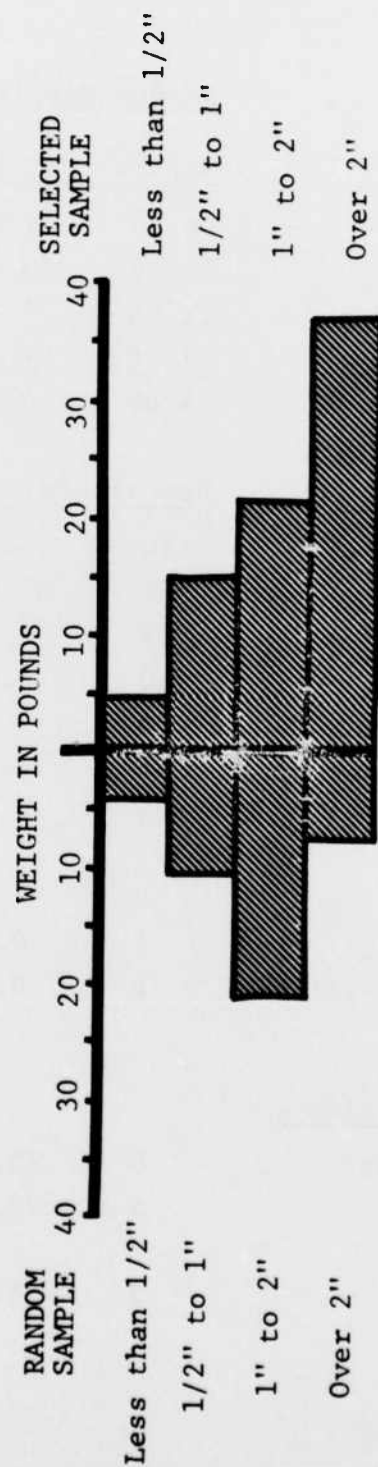


Figure 1. Weight distribution of random versus selected samples.

REFERENCES

- Adams, J. E., 1929, Triassic of West Texas: Am. Assoc. Petroleum Geologists Bull., v. 13, no. 8, p. 1045-55.
- Etchieson, Gerald M., Roberta D. Speer, and Jack T. Hughes, 1977, An archeological survey of certain tracts in and near Caprock Canyons State Park in eastern Briscoe County, Texas: Archeological Research Laboratory, Killgore Research Center, West Texas State University, Canyon, Texas.
- Patton, Leroy T., 1923, The geology of Potter County: The University of Texas Bull. 2330. Austin.
- Roth, Robert I., 1943, Origin of siliceous Dockum conglomerates: Am. Assoc. Petroleum Geologists Bull., v. 27, no. 5, p. 622-31.

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